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SUPPLEMENT:—

REVIEWS OF BOOKS.

"The Modern Plumber and Sanitary Engineer," Vols. III., IV., and V. and VI.; G. J. G. Jenson's "Cast-iron House Drainage, with Especial Reference to the Drainage of Town Houses"; T. Winder's "Handbook of Farm Buildings, Ponds, etc., and their Appurtenances"; W. S. Sparrow's "Flats, Urban Houses, and Cottage Homes"; W. Slingo and A. Brooker's "Electrical Engineering."

MAGAZINES AND REVIEWS.

Illustrations.

DESIGN FOR LONDON COUNTY HALL. BY MR. A. GILBERT SCOTT.

HOUSE AT WOKINGHAM. MR. ERNEST NEWTON, ARCHITECT.

PROPOSED COUNCIL SCHOOL, NORTHENDEN. MESSRS. MANGNALL & LITTLEWOODS, ARCHITECTS.

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Professor Lethaby's Greek Studies.

TO the architect in search for the best in Greek work these booklets* are a great gain. They belong to a type which is not very common. One could praise them most adequately perhaps by saying that they show us how little we really know.

The subject of Greek architecture is not an easy one to write about. The great sites have been presented to us in many folios, beginning with those of our own Hellenist architects, Stuart, Donaldson, Cockerell, Inwood, Pennethorne, and Penrose. In this same field we now have Dörpfeld, Furtwängler, and others, with Olympia, Priene, and Ægina; the French with Delphi, Epidauros, Didyma, and Pergamos; Hogarth with Archaic Ephesus, just published. In a place apart is Choisy, with his penetration and clearness of delineation. But there is an English method of criticism, that of Ruskin and Pater, which we too rarely find in our architectural literature. W. J. Anderson exhibited it in the opening chapters of the book so well continued by Mr. Phené Spiers. It is perhaps the peculiar merit of Professor Lethaby's booklets that they also exhibit it, in combination with an analysis of detail which is readable, thorough, and, above all, constructive.

Being mainly for the architectural student—though they ought to reach a wider public—these books will probably be but little noticed by the archæological world, which is a pity, as they fall into line with that side of archæology represented by Dörpfeld and the late T. W. Heermance, of the American School at Athens. Doubtless a very great deal that bears directly on Greek architecture would be found in the lectures of both these *savants*. But the trouble is, so much of this kind of study—including the notes and observations of many other observant men who have visited Greek sites—has never been published: the loss is ours.

Professor Lethaby has visited the British Museum to critically examine the fragments of three buildings, and he has given us the results in three books. The one on Ephesus is, in the main, a criticism of the Museum reconstructions of the later temple, in fact and on paper, due to the ability and care of the late Dr. Murray; and in both the Ephesus and Mausoleum studies we get not only the last word on the Museum fragments—with all that they represent both in themselves and through past study—but a valuable contribution to the study of the Asiatic Ionian order.

Except for a stray appreciation here and there, such as that of Cockerell on the Sardis capitals, the Asiatic work has been generally regarded as debased, even in the face of the known Archaic temple at Ephesus, a more complete Archaic work of the kind than any on Greek soil. Doubtless much of the Asiatic work is, comparatively speaking, lacking in fineness. We meet with the fillets on abaci, so abhorred by the Dilettanti Society in the early part of last century; with strange reedy bases and almost Roman volutes; with an apparent lankness of proportion in columns, increased diminutions, advanced entablatures; yet there is an Eastern temper in the best Asiatic examples, a rightness and appreciation of Ionic possibilities as well as a fine feeling for masonry, which should be just as interesting to the architect as the far better-known qualities of the Erectheum at Athens.

We think that Professor Lethaby's two books are the most suggestive piece of writing on the Asiatic order that has yet appeared in English.

The book on Ephesus gives a concise account of all excavation results in so far as they have led up to our knowledge of the later temple which, to architects, is much the most important fact about Ephesus. The earlier temple is interesting, but, as we know it, crude and ill-proportioned, though perhaps it has not yet had full justice.* The later temple was really a very fine work. Dr. Murray and his draughtsman, Mr. Cromar Watt, did not do it justice, though they had the best intentions. As Professor Lethaby expounds it we get a very different building. The stilted double-based columns, the cramped steps behind them, and the meretricious frieze all disappear; we get instead a nobly-proportioned front resting on an ample stepway, with columns as they ought to be; a balance is given to the

* "Greek Buildings Represented by Fragments in the British Museum." By W. R. Lethaby. I.—Diana's Temple at Ephesus. II.—The Tomb of Mausolus. III.—The Parthenon and its Sculptures. London: B. T. Batsford. 1908. (Parts I. and II., 2s. net each; Part III., 3s. net.)

* This statement may appear to require qualification in view of the large two-volume book on the earlier temple, by Mr. D. G. Hogarth, with contributions by Mr. A. E. Henderson, Dr. Cecil Smith, and others, which has been already noticed; but though this is a fine and sumptuous work, worthy of English archæology, the architectural descriptions are concerned too much with details, and full advantage is not taken of the opportunity of presenting the proportions of the temple *as a whole*, in the light of recent research elsewhere. But we shall have occasion to return to the consideration of this important work at greater length hereafter.

whole by the simpler entablature, so certain in æsthetic rightness that it hardly requires any additional proof of its existence.

After considering this treatment of the subject one is able to understand that the Temple was regarded in its time as a wonder of the world, not only for its magnificence and size, but for its beauty in every way. The position of the columns of the west front, dependent on the plan of the earlier temple, gives a different spacing for all the intercolumniations from side to centre; yet this very fact gives the front added vitality and a breathing space which is of great value in a portico. There is no frittering away of scale in any of the parts; all have the same large treatment as the sculptured drums and pedestals, of which we get such a vivid idea in the Museum.

Pliny mentions thirty-six sculptured columns. These Professor Lethaby disposes as follows: Ten square bases to each front, including two which formed side returns; six circular bases for the inner row of each front, and two further ones to each portico-in-antis; giving a total of thirty-six.

We are quite in agreement with this placing. The drums superimposed upon the square bases look very well in the Museum, but utterly bad in a drawing showing 50 ft. of column on the top of them. Apart altogether from æsthetic considerations, however, it is clearly shown that the Museum restoration ignores unmistakable evidence of the platform discovered by Wood. Dr. Murray deserved our thanks for his spirited attempt to place the fragments to the best advantage. It may hardly be worth while altering his placings now; but it is to be hoped the Museum authorities will put up a printed notice calling attention to the more probable arrangement, and substitute for the present elevation on the wall one which is more consistent with the evidence.

The book on the Mausoleum is from the very nature of its subject disappointing at first sight compared to that on Ephesus. Yet Professor Lethaby shows his true appreciation of the matter by not attempting a definite solution. He is definite in his rejection of the "small-plan type" proposed by J. J. Stevenson and others; also in his adherence to the simpler "large-plan type," with its single row of surrounding columns, of which type he selects Adler's restoration as perhaps the best that has yet been advanced. He takes us far enough to see clearly that it is impossible to dogmatise on the evidence we now have, or probably can ever hope to have; but he thrashes out, grain for grain, such evidence as there is. We feel, too, at the end, just as clearly as in the case of Ephesus, how this building would also be a wonder in the ancient world.

It is not the actual size of the Order which is any great factor in this case. That, in comparison with Ephesus, is small, though the workmanship is more advanced in date and more refined in intention. It is the immense strength of the motive which counts, of a square of Ionic columns adequately supporting a pyramid of marble steps culminating in the great chariot group which Professor Lethaby rightly calls one of the noblest sculptural groups in existence. In choice phrases he draws attention to this, which from the nature of its position had to exhibit all the care in workmanship of which the sculptor-architect was capable.

The square of columns set on a finely sculptured base, the towering pyramid with its great upborne group flashing in the sun, the spacious precincts set with sculpture of a more stationary kind and duly centralising the whole, must have produced an effect easy to understand as magnificent in the extreme.

Again one sees the value of the "architrave order" which, we are told, must have existed here. It may be contended that this feature of Ionic work in Asia Minor is a more appropriate treatment for masonry than the entablature with a frieze. The frieze, in fact, is really a survival of wood construction, and the Athenian Greeks, who were responsible for its use,* may have had some thoughts to this effect in designing the Caryatid Portico of the Erectheum, where there is no frieze. The architrave and dentilled cornice used at Priene—and which, in somewhat similar form, must have been used at Ephesus and the Mausoleum—is a very effective piece of cornicing and perfectly suited for its position.

It is notable that we are content to acknowledge the Greek Ionic Order with its frieze as being beyond reproach, and at the same time wish no other member in the friezeless entablature of Asiatic work.

With all the attention to architectural detail in these volumes, an attention which amounts almost to minuteness, it is not the object to produce a set of supposed correct proportions and ratios. Concerning these Professor Lethaby has some useful remarks on page 42 (Mausoleum). His intention is rather to get at real facts about the buildings as evidenced in the details of their construction.

In the Mausoleum book, for example, he arrives at such useful conclusions as that the spaces between the square plinth blocks of the columns were approximately square; also that while at Ephesus the abacus is longer on the face than on the return, at Priene it is nearly and at the Mausoleum quite square; that the angle volute of the Mausoleum "is not thrown quickly out from a general square form, but the whole of the two external sides curve outwards, both the cushion and the abacus" (page 58); that the cella wall of the Mausoleum had an inclination from the perpendicular of 1 in 100. It is surprising how really important facts like these come to be passed over in descriptions which aim at being thorough.

Coming to larger ground we get the following important conclusions in the Mausoleum book, arrived at by a quite convincing train of argument: (1) that the columns stood about 9 ft. 9 in. from centre to centre; (2) that the flanks were two bays longer than the front; following from that, that the whole base of the pyramid had sides in the ratio of about 34 to 43, the columniations of eight and ten bays governing the proportion of the pyramid base; (3) the proportion of pyramid base arrived at by the set-out of the columns is confirmed by the actual step fragments in the Museum, which are of 17-in. tread on the front and 21½-in. on the return. All this is clearly shown by a plan diagram (Fig. 34).

As we should expect, the greater part of the third and most bulky book of the three is devoted to sculpture, for there are comparatively few fragments of architectural detail pure and simple belonging to the Parthenon in the British Museum. The description of the architecture is adequate as an introduction to the main matter. There are two excellent illustrations taken from Penrose—section of the portico and perspective view of the angle of the roof. The small pen sketch showing the building among the stars is good, as it catches the view of the ruined east end in high light and quite suggests the rectangle of the structure. The trend of the rocky foreground is well conveyed.

The inimitable lie of the building is no small part of the charm of this familiar view from the north-west. There can be very few buildings in the world so perfectly set: the rocks seem made for the building, which indicates a triumph of placing. The description of the sculpture is admirable and shows great care in treatment. It is no easy matter to write of masterpieces like the Parthenon frieze and pediments, yet here Professor Lethaby is, as usual, fresh and to the point.

There are "purple patches," as where the pediments are described on page 115; but it is the entire method that most strikes one, coupled with the originality in selection and real constructive value of the illustrations. Many of these are quite new. Such ones as the part of a wing and its suggested restoration on page 139, the "sculpture and joints" on page 96, and the diagram of mass and background on page 94, are of a kind not often seen in writings on Greek sculpture. They belong to the author's architectonic point of view, the only true method of dealing with a building as a whole.

There are no photographic illustrations in this volume (there are very few in any of them), but mostly pen drawings; and rendered as they are here, these are more in sympathy with the treatment of the subject than photographs would be. Perhaps the Iris in Fig. 120 and the Fates in Fig. 122 might be specially singled out.*

The printing is well done and is a great credit to Messrs. Batsford. We have come across no errors in it. There is a footnote in the Mausoleum volume stating that feet and inches are written thus: "2,9." They appear to be written differently in the Ephesus volume, thus: "6.4," and there is no explanation in that case to warn the reader that he is not accepting a decimal measurement.

We are strongly with Professor Lethaby in his concluding remarks about the placing of the sculptures in the Elgin Room. Without doubt, as he suggests,

* W. J. Anderson drew attention to this some time ago. "The frieze," he says, "is a Hellenic creation, oriental entablatures consisting only of the two parts, the beam and the cornice." (Anderson & Spiers. "The Architecture of Greece and Rome," second edition, page 61.)

* As there is no mention of the author of the drawings, we infer they are early ones by Professor Lethaby himself.

a few portions at least of the frieze and one or two metopes ought to be at eye-level in a position where they could be closely studied. He instances the Louvre, but still better is the Acropolis Museum, where nearly all the fragments can be seen to advantage.

Some of the illustrations have already been referred to. They are, as a whole, most excellent, particularly perhaps the process blocks from pencil or chalk drawings of some of the sculpture, though all are good. The books strike one as very well got up in every way. Messrs. Batsford have produced them in convenient form, as presentable in themselves and as suitable for binding in one volume. At the beginning of the third part there is a fourth part advertised with the title of "Other Works." This will complete the series, and we understand it is to appear some time in the autumn.

GEOGRAPHY AND SURVEYING.

LAND surveying as practised by architects, estate agents, and auctioneers in the United Kingdom has been so much simplified by the work of the Ordnance Survey that it would scarcely be appropriate to suggest any connexion between surveying of the kind and geography.

But the higher branches of surveying and the results they yield practically constitute two important sections of the science of geography, or at any rate furnish data without which those sections of the same science could not be practised with accuracy. Therefore it was quite in accord with the fitness of things that, in opening the proceedings of the Geographical Section at the British Association meeting, Major Hills should have addressed himself to the subject of surveying.

While expressing the desire to restrict his remarks to the survey of the British Empire and especially of those lands under the more immediate control of the home Government, the sectional President was not quite able to keep within the limit so defined. The reason for this excusable and welcome deviation is to be found in the fact that British surveys cannot be entirely separated from the surveys conducted by other countries. As Major Hills said, the determination of the figure of the earth is a problem which cannot be completely solved until the whole surface of the world has been surveyed. We may add that it cannot be accurately solved until the surface has been completely triangulated, and the results agreed and corrected as necessary by an international commission of experts.

The British Ordnance survey, commenced for military purposes in the Highlands about 1747, and completed as far as the primary triangulation in 1857, was pioneer work of the highest order. Major Hills said justly that it set a standard of accuracy never before attained, and was for long taken as the model for such work in other countries. Still we must be prepared to admit that it fell somewhat short of the precision demanded and attainable in the present day. This view was put forward by Major Hills two years ago at the York meeting of the British Association, and it is confirmed in the summary of geodetic surveys prepared by General Ferrero at the request of the International Geodetic Conference. In that book the position of the British survey in respect of accuracy is placed at the bottom of the list of national surveys.

In 1860 the Russian Government, on the suggestion of Struve, invited the Governments of England, France, Belgium, and Prussia to co-operate with the object of connecting their triangulations so as to form a continuous chain from Valentia in Ireland to Orsk on the Ural in Russia. The undertaking was commenced without delay, the British triangulation was connected with that of France in 1862, but has not yet been satisfactorily completed.

Owing to its inferior accuracy our own triangulation cannot be co-ordinated with the continental series for geodetic purposes. Major Hills mentioned in his address that three stations in Kent—St. Peter's Church near Broadstairs, Coldham Hill near Folkestone, and Fairlight Hill near Hastings—were connected with three stations in France—Montlambert near Boulogne, St. Inglevert near Wissant, and the Clock Tower at Gravelines. The observations were made with great precision, and all that is now required is to connect geodetically the three Kentish stations with the extreme points of Valentia in Ireland and Saxaford Hill in the Shetlands.

The resurvey necessary would not be a serious matter, for the whole network of triangles covering the United Kingdom need not be altered in any way, as the errors existing are very small and quite negligible so far as maps and ordinary purposes are concerned.

Major Hills dealt at some length with surveys in the smaller colonies and the survey of British Africa. No doubt a good many of his hearers would have appreciated some remarks on the surveys of the Indian Empire, Canada, Australia, and New Zealand, and on the future co-ordination of these with the surveys made in adjoining or adjacent countries. However, from the particulars given it is clear that a large amount of work remains to be done even in the British Empire, and that astronomers will have to wait a long time yet for the data upon which depend the exact determination of the figure of the earth.

NOTES.

The Trade Union Congress.

THE forty-first session of the Trade Union Congress was opened at Nottingham on Monday last, when 518 delegates were present representing 213 societies with a total membership of 1,776,000. Mr. Shackleton, M.P., delivered the presidential address, and the points in his speech properly within the scope of trade unionism were the allusions to the necessity of extending the Old Age Pensions Act and of reintroducing a Bill dealing with unemployment, and a reference to the North East Coast trade dispute and the lack of confidence in the officials that had been disclosed in the negations in relation to that dispute by the men. We must reserve a detailed notice of the proceedings at the Congress until next week. Since the introduction of the Parliamentary levy trade unions have become to a large extent political organisations, and therefore the discussions at these meetings take a more political character year by year.

The Holborn-Strand Improvement.

WHEN deciding upon the execution of this scheme the London County Council hoped to cover the total cost by development of the new building sites in Kingsway and Aldwych. Unfortunately the public have not displayed any overpowering anxiety to take the available lands on building leases, being deterred in part by the stringent conditions laid down (quite rightly) by the Council. It is satisfactory to note that some improvement is now taking place, attributable in a measure to the more favourable terms offered as well as to the co-operation of estate agents with the Council in the disposal of sites. The general experience in London is that property owners require a somewhat prolonged period for deliberation before building on the frontages of new thoroughfares, and considering the fact that Kingsway and Aldwych have not yet been in existence for three years the number of premises completed, under construction, and projected makes a fairly important show. So far as can be judged at the present time the net cost of the improvement, including interest and other charges, will not be far short of a million sterling. Sometimes, as in the case of Northumberland-avenue, the cost of street improvements can be recovered from tenants. If the same result could be attained universally the main difficulty of dealing with the traffic problem would be at once removed. We fancy, however, that capitalists and business firms will never become enthusiastic adherents to the betterment principle, and that the future Haussmannising of London will necessarily be an expensive matter.

Floods and Forest Fires.

RECENT floods in Georgia and neighbouring States have resulted in the loss of many lives and the destruction of property to the extent of several millions of dollars. Occurrences such as this are clearly traceable to the denudation of forests in the mountain regions and point to the urgent necessity of reafforestation as a safeguard to the population. Despite the frequent warnings addressed to the Federal Government very little has been done in the United States for controlling the head waters of rivers by forest growth. The result is that in many regions where the mountains have been denuded of trees inundations are steadily increasing in frequency and strength. Turning to another aspect of the forest problem, we find that only last week an additional illustration was furnished of the enormous losses caused by the wholesale destruction of timber as the result of carelessness and utter indifference: sundry fires were in progress in the forests clothing the sides of the Rhodope Mountains near the Turkish frontier of Bulgaria. Similar fires have been responsible for much damage in past years, and so far as can be ascertained they

appear to commence in Turkish territory where no precautionary measures are adopted and nothing is done to extinguish or check the progress of fires when once started. In this respect few nations are qualified to throw stones at the Ottoman Government.

State Control of Railways. MR. ACWORTH, the well-known author of some most interesting books on the history and the working of English railways, in his address as President of the "Economic Science and Statistics" section of the British Association, took for his subject "The Relation of Railways to the State," a subject which he said was at present being discussed all the world over. From the Economic point of view he succeeds in producing on his readers the conclusion that there is nothing whatever to be said in favour of State ownership of railways, all the existing instances that he adduced being those of State-owned railways which had been worked at a loss, and in some cases been abandoned for that reason. But the economic is not the only point of view in connexion with the subject; there are the questions of safety, speed, and efficiency of working. It is possible (though we doubt it) that a yet higher factor of safety might be attained under a State management of our railways; it is almost certain that speed and efficiency would decline. There are some small and badly worked local lines the conditions of which would be improved under State control; but the great leading railways of this country maintain services which for the combined qualities of safety, speed, and conscientious attention to their duties on the part of employees,* are not equalled anywhere in the world, and we are jealous of any attempt at State interference with them, which we believe could only result in their deterioration.

A New Train Ferry. AT a time when the Channel Ferry scheme forms the subject of discussion we may appropriately draw attention to the service which is about to be established by the German and Swedish Governments across the sixty-five miles of open sea separating the ports of Sassnitz and Trelleborg. Four steamers, one of which is being built in England, will be provided as a commencement, each vessel being capable of receiving a train of eight or ten carriages on two parallel lines. The vehicles will be run upon the stern end of the vessel from a specially designed quay and landing stage, and when on board they will be secured by means of ring plates, screws, and spring buffers. By the provision of deep bilge keels it is hoped that rolling will be minimised. A rudder in the bow, an unusually large number of watertight compartments and submarine signals are among other precautions for the safety of passengers. Ample accommodation for passengers is to be provided on the promenade deck and sleeping berths below the train deck. A service of the same character seems to be the best solution of the cross-Channel problem, the main difficulty on the English side being the scarcity of room at Dover, a port on which the promoters of the undertaking have set their eyes. Folkestone ought to serve equally as well, and there is no reason why similar ferries should not run on the Newhaven-Dieppe and Southampton-Havre routes.

* This latter is a point little appreciated by the travelling public, who have a most inadequate idea of the constant care and watchfulness for their safety which is practised day by day all over the country by thousands of minor railway officials. Compare the frequent accounts we have of railway disasters in America due either to bad structure of a road or viaduct, or to a flagrant neglect of duty such as the humblest official on an English railway would not be wilfully guilty of; and consider how very rare it is that an English railway disaster can be traced to any conscious or wilful dereliction of duty.

Water Supply and Service Cisterns. THE Metropolitan Water Board has been occupied in making prosecutions against some residents in the Surbiton districts in respect of various alleged irregularities in dealing with the water supply, and defects or illegal arrangements in regard to fittings; some charges were fairly made out, and some fell through. But there are one or two points worth notice in connexion with these proceedings. One is that Mr. Munroe, the counsel who appeared for the Water Board in regard to a case in which an owner was charged with having a 3-gallon service cistern to a closet, admitted that "he himself preferred a 3-gallon cistern," but as the Act limited it to 2 gallons it must be carried out. We may remind our readers (not for the first time) that many years ago an expert inquiry and a series of experiments carried out under the Local Government Board was held by that Board to have proved that a 2-gallon flush was insufficient for sanitary purposes; that even if it cleared some forms of basin, it did not clear the drain; a fact of vital importance in a city, where drains necessarily run under many of the houses. Everyone expected that after this Report the then existing water companies would be required to accept 3-gallon service cisterns; and no one has ever known by what diplomacy they managed to get this Report of the Local Government Board over-ridden, and to be allowed to continue insisting on the 2-gallon limit, in the interests of their shareholders and contrary to the interests of the public. The water supply of London is now under the control of a public body which is supposed to act in the public interests and has no shareholders to satisfy; and we recommend the acting officials of the Water Board to make themselves acquainted with the Report of the Local Government Board on the subject (the particulars of which that Board can no doubt furnish them with), and to consider whether they are justified in continuing to insist on a limit of flush for closets which has been proved to be inadequate for its purpose, and in respect of which their own representative counsel has given them away.

Examination of Water Fittings. A WORD may also be said as to the perfunctory and high-handed manner in which minor officials frequently report on alleged deficiencies in water fittings. At the time when the late New River Company commenced "constant service" young men in the Company's livery rushed over a house in two minutes, noted down as wrong everything that was not according to their preconceived ideas, and saddled the householder with a peremptory demand to renew nearly all his fittings. The present writer had a demand to replace six different fittings in his house, on which he demanded inspection by a superior functionary, who duly attended, and had to admit that four out of the six requirements were totally needless. One of the fittings condemned was a Kelvin tap which had been in position for seven years, and was as tight as the day it was put in; the sole reason given being that the Company "did not like Kelvin taps"; why, their representative could not say. In this case they dropped on a householder who knew something about it, and who refused to be put upon; but householders ignorant of plumbing are at the mercy of inspectors of this type, and it is in their interests that we ask whether this kind of thing is going on still, or whether the present Water Board will not consider it their duty to see that householders are treated in a reasonable manner in respect of their fittings, and not put to unnecessary expense at the bidding of some young official who wants to show his smartness in finding out defects.

Beautifying the Black Country. THE *Birmingham Daily Post* a few days since drew attention to a proposal of the local Distress Committee at Walsall to find useful work for the unemployed in levelling, cultivating, and planting the "spoil banks" of the Black Country. If this can be successfully carried out, it would be a piece of work well worth its cost, and distinctly in the public interest. It appears that a somewhat similar experiment was made about twenty years ago, by the present head park-keeper under the Walsall Corporation, Mr. Everton, on an estate called Reeds Wood, which then consisted of nothing but "spoil" land, without a tree upon it. It was to some extent levelled, and some of the pit mounds were planted with saplings, which, in spite of the unpromising nature of the soil, have thriven and grown up into trees some 50 ft. high. If a similar transformation could be brought about in dealing with the "spoil" beds of the Black Country, one of the greatest blots of ugliness on a considerable tract of country would be removed; and we wish success to the enterprise.

The Monks' Cell, Westminster Abbey. AN interesting apartment, situated in the oldest portion of the conventual buildings of the Abbey, will, we gather, be shortly opened to the public. The room, commonly known as the "Monks' Cell," is being reinstated and fitted with a tiled floor, under the superintendence of the Clerk of the Works to the Dean and Chapter, for the purposes of a museum, in which will be exhibited various relics and similar objects relating to the archæological history of the Abbey. The room adjoins the Chapel of the Pyx, and what is now the gymnasium of Westminster School. It is entered from the darkened passage which leads out of the south-east corner of the great cloisters. The passage passes between the Refectory and the site of the Misericorde on the

west, and, on the east, the range of cellars in the substructure of the Monks' Dormitory, *temp.* King Edward the Confessor. See the plans published in our numbers of March 7, 1885, and January 6, 1894.

THE HUNGERFORD ALMSHOUSES, CORSHAM.

The village of Corsham, near Chippenham, Wilts, possesses a very attractive group of stone-built almshouses, founded and endowed in 1672 by Margaret, the widow of Sir Edward Hungerford. Above the doorway appear the arms and crests of the Hungerfords, surrounded by sculpture of a Renaissance character. The attached chapel has retained its original Jacobean pulpit, stalls, screen, and gallery. There is also a good oak staircase, and an exterior corridor leading to the various domestic rooms of the inmates. Edward Hasted, the historian of Kent (*obiit* 1812), was for some time master of this interesting foundation.

Sidney Heath.

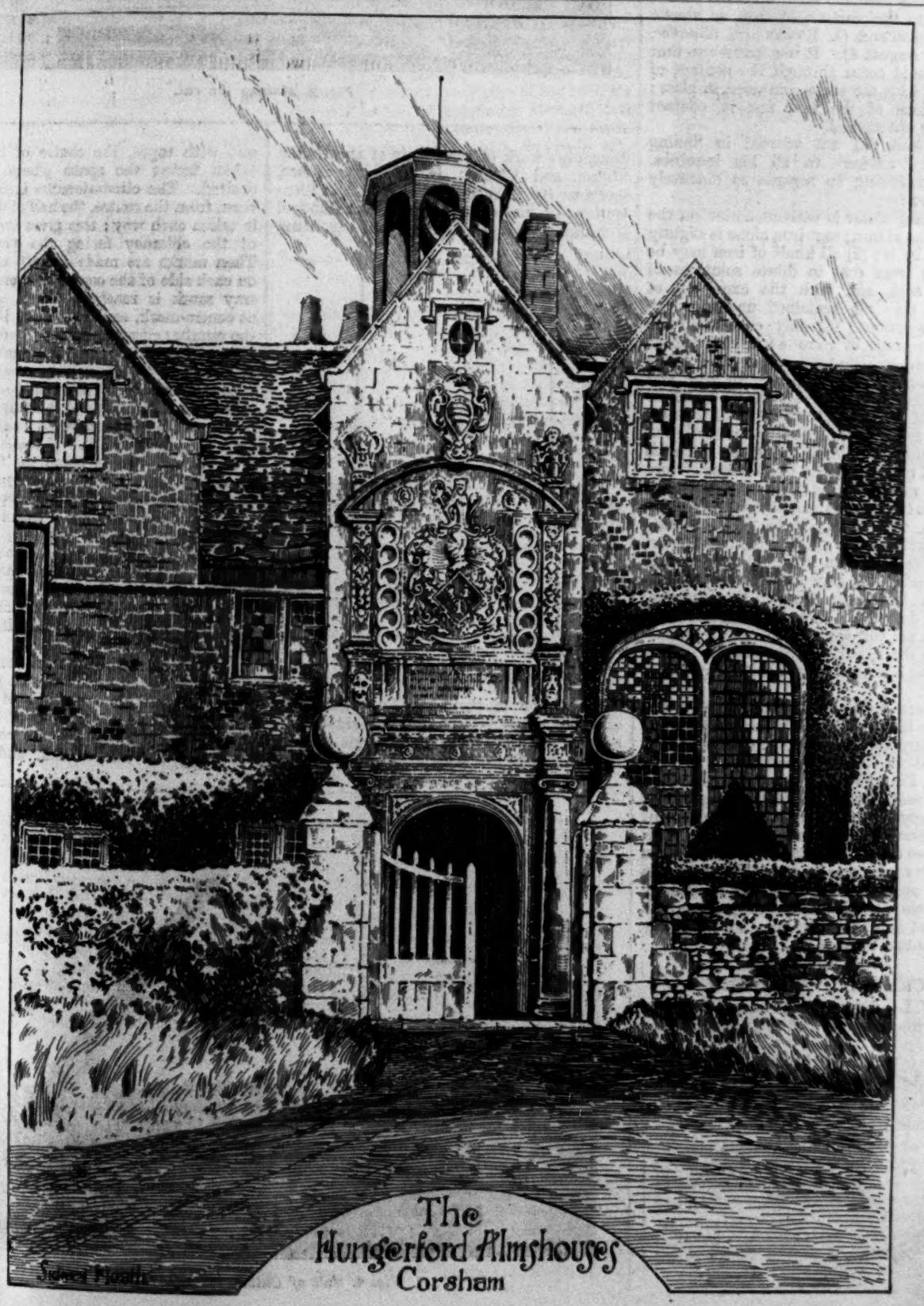
THE WASTING OF IRON.

The series of articles on this subject, by Mr. T. Holgate, which appeared in the *Builder* from July 4 to August 15 of this year, had just been concluded when there appeared an important statement made to the Iron and Steel Institute which ought not to be overlooked.

One of the Institute's Carnegie Research scholars, Mr. J. Newton Friend, Ph.D., of Mildenhall, Suffolk, has been occupied in the laboratories of the University of Wurzburg, investigating the subject in the light of the most advanced chemical knowledge, and has made use of the results of the many careful workers, most of which have been referred to in the articles just concluded.

The details of the work he has done cannot here be given, but it is quite evident that much care has been exercised, and the great difficulties in the problem fully recognised. We can only refer to the conclusions he claims to have reached so that it may be seen how far they accord with practical experience, and help to elucidate the latter.

Dr. Friend in summarising the work of previous investigators says that we have now to decide between the electro-chemical theory of Whitney and the older acid theory; and that his own research points conclusively to the fact that the rusting of iron is primarily the result of acid attack. To avoid confusion it should here be remarked that this opinion refers only to pure iron, for the research shows that cast-iron is subject to further actions, which Dr. Friend regards as electrolytic and proceeding between the various chemical components of cast-iron.



The Hungerford Almshouses Corsham

A large part of the difference of opinion between the two schools of thought hitherto existing is due, he thinks, to a fact unknown until recently discovered by Sylvestre A. Leduc. That chemist has recently proved that all the dissolved air cannot be expelled from water by the mere process of boiling, and that a considerable percentage of this residual air is carbonic acid. Accordingly, Dr. Friend has devised tests which provide for eliminating this hitherto unsuspected constituent, with results that, in his opinion, show the electrolytic theory of corrosion to be untenable. He confirms the statement of Dr. Dunstan that *liquid* water is essential to the formation of rust, and in a special set of experiments he has found that the hygroscopic character of rust is the root cause why once formed, wasting proceeds so rapidly. Another unsuspected cause of error for previous experimentalists Dr. Friend considers to be the gases, and specially the carbonic acid, occluded in the pores upon the surface of iron as shown by G. Belloc and O. Boudonard (*Builder*, page 156, August 8). It was found also that rusting could occur through the contact of pure iron with the silica contained in glass; the portions of the iron not in contact remaining unattacked.

Dr. Friend did not succeed in finding satisfactory answers to all his inquiries, but the following he regards as definitely ascertained:—

(1) Boiling water is without action on the purer forms of iron; cast-iron alone is slightly attacked by it; (2) all kinds of iron may be kept free from rust in dilute solutions of chromic acid, and with the exception of cast-iron they all remained unchanged in alkaline solutions; (3) only cast-iron rusts in the presence of pure water and air at atmospheric temperatures. The purer forms of iron require the presence of an acid, and are not affected by water and air, or by steam and air, at 100° C. The presence of bacteria is not essential to corrosion, and reduction of pressure does not inhibit it; (4) the corrosive action of rust lies in its hygroscopic nature whereby moisture containing carbonic acid condenses in its pores, and affects the further corrosion of the metal; (5) neutral salts of the alkali metals, *e.g.*, common salt, exert a corrosive action on iron; (6) pure iron is not corroded by pure hydrogen peroxide (see Dr. Dunstan's theory, this volume, page 94, July 25). Wrought-iron, steel, and cast-iron are corroded to an extent proportional to the impurities they contain. Cast-iron alone is corroded by alkaline hydrogen peroxide.

Professor A. W. Tilden has pointed out (see page 126, August 1) the necessity for the use of absolutely pure iron in these chemical investigations, and it is important to note that Dr. Friend's sample of pure iron tested 99·4 per cent., whilst that of Dr. Dunstan was exceedingly pure iron, testing 99·94 per cent.

The lessons for practical men to draw from these careful observations are largely in conformity with those given in the articles on "The Wasting of Iron," but they accentuate if possible the necessity of keeping all structural iron perfectly dry and absolutely out of contact with air.

CHIMNEY "THROWING."

MR. W. LARKINS, well known as a "Steeple Jack," who carried out the difficult and dangerous work of the repair of the Nelson Statue and Column in Trafalgar-square, sends us the following description and illustrations of his recently adopted method of "throwing" large chimneys, and regulating the direction of their fall, by means of a carefully measured cut into one side of the base of the chimney. Mr. Larkins says:—

"The height ascertained, the pitch marked out with ropes, the centre of the shaft is taken facing the space where the fall is desired. The circumference is next taken; then, from the centre, the half of the diameter is taken each way; this gives the exact half of the chimney facing the place of fall. Then marks are made exactly at each foot on each side of the centre line, until the half-way mark is reached. Then, commencing at centre-mark, each foot mark is numbered, the number corresponding on each side of the centre mark (Fig. 1), until the half-way mark is reached. This ensures the cut being made accurately; as soon as the man on one side reaches, say, No. 4, he calls out to the man on the other side, to enable both to keep together (Fig. 2). If the cut was, say, 6 in. out, it would mean the throw to be several feet out. If there is a good stretch of ground for the shaft to fall, a deep cut (Fig. 3) will throw the shaft like a tree, in fact, until nearly reaching earth (Fig. 4). This causes the bricks to "stretch" out half the length of shaft over its height; but if space is limited a thinner cut is made, which causes the opening to meet quicker, thus breaking the shaft up in its fall, and dropping it in half its own height.

When the half-way mark comes over a flue (Fig. 5) the arch must be propped up, or the tremendous weight of the shaft, coming on the arch, as it commences to heel, will cause the arch to collapse, thus changing the line of fall, and causing a

Fig. 2. Making the cut.

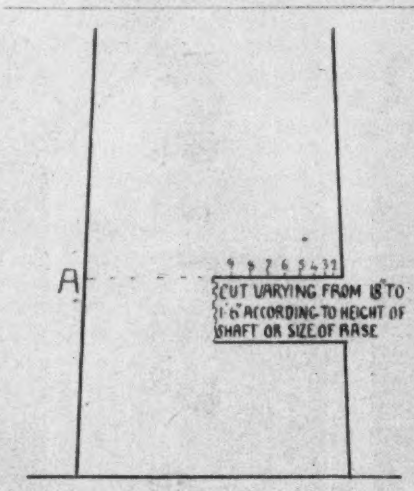


Fig. 3.

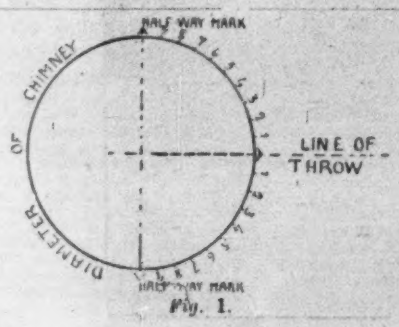


Fig. 1.

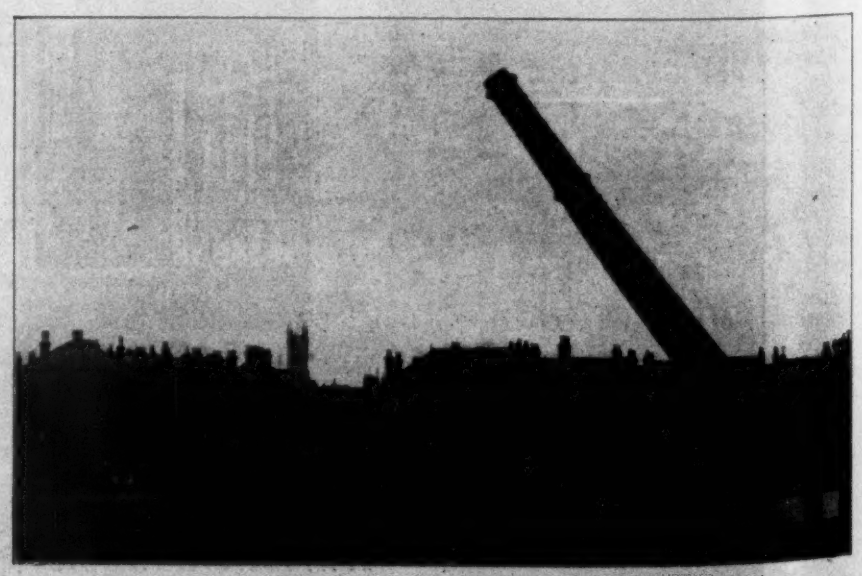


Fig. 4. Fall of Chimney at Aldershot.

disaster if houses or workshops are in the way.

A strict rule to follow is never to pass in front of the opening, and keep a sharp look-out for signs of collapse; the first sign is the opening of a joint of the brickwork opposite the upper edge of the cut (see A., Fig. 3), A long disused shaft, or a rotten one,

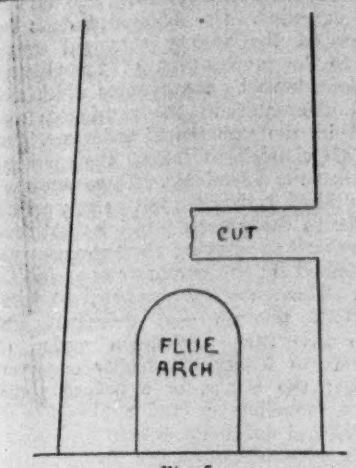


Fig. 5.

collapses when only one-third is cut; a well-built or dry shaft often does not fall even when cut to the half-way mark (Fig. 6).

This method is the cheapest. The old method, to prop with timber and burn away, takes a great deal of labour, apart from timber props, inflammable material (oil, several casks of paraffin, etc.); also risk of fire to surrounding property. This cutting method costs only a trifle; although I must say I am the only steeple jack who adopts it—it being considered risky; but I accept all liability as to damage to property, etc.

The highest chimney I have "thrown" in this way was Par Stack, Cornwall, last autumn (Figs. 6, 7). This was 300 ft. high, and weighed over 3,000 tons; moreover, the shaft was "tackled" by several other steeple jacks to demolish piecemeal, but they left the work after six weeks, during which time they made little impression on the chimney, so I obtained the contract to "throw," which was an entire success.

The two shafts which I "threw" two or three weeks since occupied three and a half hours, at a much lower tender for the cost of the operation than any other submitted."

Fig. 6. Par Stack as cut previous to fall.
(It stood for some hours in this state before falling.)

Architectural Societies.

ROYAL VICTORIAN INSTITUTE OF ARCHITECTS.—At the Royal Victorian Institute of Architects, Colonel Monash, M.Inst.C.E., recently contributed a paper noteworthy for some particularly good advice on the subject of reinforced concrete work. The most striking features of the new method of design are said to be the employment of a rigid monolithic framework, and the abandonment of heavy exterior walls; the careful calculation of stresses as followed in engineering construction thereby obviating useless weight and cost in every part of the building; the realisation of maximum strength from a given quantity of materials. The author recognises the point which we have often urged, that the concrete must be a scientifically designed material widely different from the rough concrete hitherto used in buildings. He also emphasises another fact upon which we have frequently insisted, namely, that unless experienced contractors are retained, the actual strength of reinforced concrete will probably be no more than half the estimated strength, a consideration which has led in Europe and America to the general employment of specialist contractors, accepting full responsibility for the safety of the work, and able to command trained labour and competent supervision. Alluding to coke breeze, Colonel Monash points

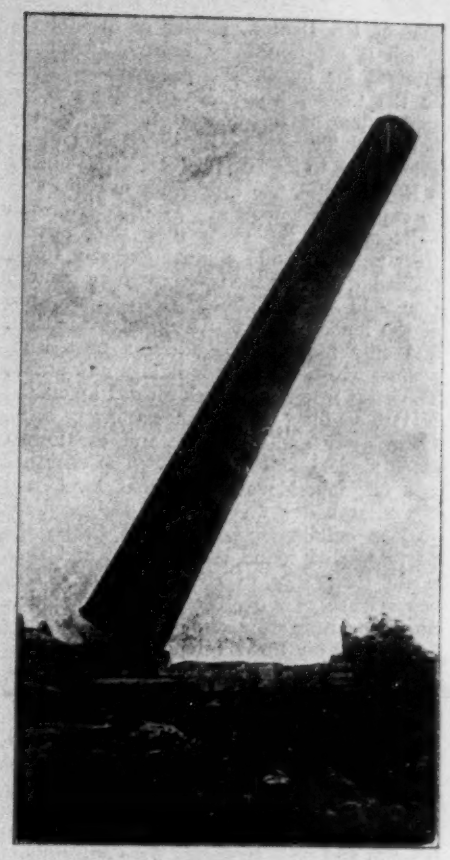


Fig. 7. Par Stack in act of falling.

out the fallacy of supposing that such material can save weight in floors designed for load carrying. Breeze concrete is certainly light, but, being weak, the extra bulk of material required for a given resistance more than counterbalances the low specific gravity of the coke. This, of course, is quite apart from the objectionable character of the aggregate in other respects. While admitting the efficiency of patented bars and fabrics as reinforcement, the author concludes that their employment cannot be justified on economic grounds, his reason being that plain round bars are just as good, and can be bought in Victoria for less than one-third of the cost. In conclusion, we are glad to hear that the rules of the Royal Institute of British Architects for reinforced concrete have been proposed for embodiment in the new building regulations for Melbourne, and are recommended to the Royal Victorian Institute of Architects as a safe guide to sound design.

Archæological Societies.

SHROPSHIRE ARCHÆOLOGICAL SOCIETY.—The annual excursion of the Shropshire Archæological and Natural History Society took place on August 28, when a large party of members and friends spent the day in studying some of the antiquaries of Ludlow. They met at the Church at 11.30, where the Rev. W. G. Clark-Maxwell gave a *résumé* of the history of the building, and Mr. St. John Hope called attention to its architectural features. The plan of the church was laid out on its present lines in the XIIth century, probably at the time that the great castle founded by Roger de Lacy in his manor of Stanton had begun to attract considerable population under its protection. In 1199 mention is made of the enlarging of Ludlow Church, and the XIVth and XVth centuries brought many alterations and additions to it. The church is rich in old stained glass, and formerly possessed many chantry chapels, the sites of the altars of which were pointed out by Mr. H. T. Weyman. The tomb at the north-west end of the church, popularly, but incorrectly, associated with Prince Arthur, is shown to be probably

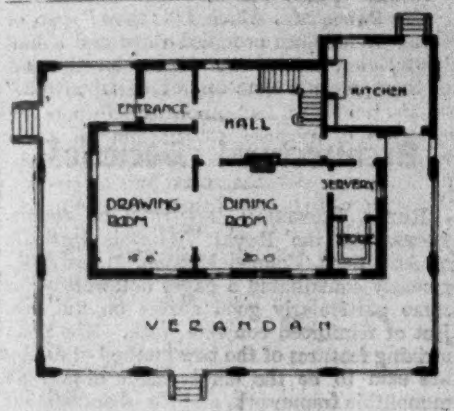
that of Dr. Denton, master of St. John's, which is mentioned by Leland. After an interval for lunch, the party reassembled at the Castle, where Mr. St. John Hope spoke first of the general history of the building. There is little documentary evidence as to its early history, as, not being a Royal castle, the Pipe Rolls are silent as to expenditure upon it. The first Norman builders used the stone they took out of their moat to build a great gateway tower instead of making the usual earthern mound. One side of the almond-shaped enclosure of the inner bailey was fortified by nature, and only required the addition of a wall, against which the later buildings now stand. The great tower was much altered about the XIIIth century, the entrance archway being taken away and built up, and the lowest story made into a dungeon. The entrance was made beside at a different level, and the outer bailey was enclosed and used for various buildings. Leaving the Castle the party walked round the exterior, and then made their way to the little late XIIth century chapel of St. Thomas of Canterbury, now a furniture store, and so to the Grammar School, where the XIIIth century hall of Thomas Barneby now forms part of the school precincts. The Teme was crossed by the picturesque Ludford Bridge near the site, in 1459, of camps of the rival forces of York and Lancaster. Ludford House was visited by permission of Mr. A. C. Brown. This contains early work in its walls, for it was originally a hospital of St. Giles, where beggars and poor strangers were entertained in mediæval times. The excursion concluded with a visit to Ludford Church, where the Rev. R. V. Tremills pointed out the objects of interest.

ROYAL AUTOMOBILE CLUB BUILDINGS.—As announced under "New Buildings for London and Suburbs," Mr. Edward Keynes Purchase, F.S.I., has been appointed architect for the new premises the Royal Automobile Club is to put up in Pall Mall on the site of the Old War Office. Excavation work is being carried on by Messrs. George Trollope & Sons and Colls & Sons, Ltd., 77, Grosvenor-road, S.W.

HOUSE AT ATBARA.

THIS is a house built on the banks of the Nile, from the designs of an English architect, Mr. G. W. Lord. It has been erected for an official of the Sudan Government Railways. It is built of locally burnt bricks, and roofed with Marseilles tiles. The work, with the exception of the internal woodwork (which was made in the railway workshops), has been carried out by local contractors.

The drawing was exhibited at the Royal Academy this year.



House at Atbara. Plan.

Legal Column.

BUILDING ESTATES AND RESTRICTIVE COVENANTS.

THE case of Elliston *v.* Reacher (current "Law Reports") is one of considerable importance as to the rights of purchasers of plots on a building estate to enforce the covenants contained in the conveyances one against the other. The facts are of considerable complication, but may be shortly stated as follows. In 1860 a building society acquired the title to a building estate which was plotted out as shown in a sale plan which also contained certain restrictive covenants, one of which was that on no lot should any hotel, tavern, public-house, or beer-house be erected without the vendor's consent. The society completed its title on January, 1861, and an engrossment was prepared purporting to be made between the trustees of the society and certain other parties, showing a plan of the estate, and containing the above covenant, but this was never executed. On subsequent dates the trustees of the Society conveyed certain plots to the predecessors of the plaintiffs and defendants by conveyances which contained references to the restrictions contained in the unexecuted indenture. The plaintiffs claimed to enforce the covenants as against the defendants. There were many points raised in the case, but we only propose to refer to the general principles laid down by the Court as applying where covenants can be enforced by one purchaser as against the other. These may be summarised as follows: (1) Both plaintiff and defendant must derive title from a common vendor. (2) Previous to selling the vendor must have laid out the estate, or a defined portion thereof, including the land purchased by the plaintiff and defendant or their predecessors, subject to restrictions which, though varying in details, must be consistent in themselves and with a general scheme of development. (3) The restrictions must be for the benefit of all the lots sold, whether or not they are intended to benefit land retained by the vendor. (4) Both plaintiff and defendant, or their predecessors, must have purchased from the common vendor on the understanding that the restrictions were to enure for the benefit of the other lots included in the general scheme. This latter point only infers knowledge on the part of purchasers of the facts involved in the first three points. In the case under consideration, having regard to the references in the conveyances to the unexecuted indenture and to the sale plan and conditions, the Court held that the above principles had been complied with although some of the plaintiffs had since lost their rights to enforce the covenants in the case of one of the plaintiffs, and granted an injunction

House, Atbara, Red Sea Coast. Mr. G. W. Lord, Architect.

restraining the defendants from using a certain building as an hotel.

A Question on a Building Contract.

Our attention has recently been drawn to a decision of a Master of the King's Bench Division in an interpleader issue arising out of a building contract. The contract was in the form sanctioned by the Royal Institute of British Architects, clause 27 of which defines "prime cost," whilst "provisional sums" are dealt with in clause 28. The bills of quantities, which it is understood formed part of the contract, provided that:

"All prices and provisional sums which are quoted as P.C. are to be taken as absolutely net after deduction of trade discounts, but not deducting discounts for cash, and will be so treated at the settlement of accounts. The contractor must therefore add the profit, packing, carriage, haulage, etc., he requires to all such items, and he shall produce the receipted accounts when called upon, showing the P.C. of any materials used by him. All provisions and provisional sums are to be used as directed by the architect, or omitted wholly or in part if not required, together with the proportion of any profit that has been added, and items of profit will not be allowed upon moneys which are not paid through the contractor."

A variation was made in the bills of quantities by way of a bill of reductions in which was added the item, "288 super. yds. 2½-in. granolithic paving on 4-in. brick foundations laid complete by the Patent Victoria Stone Company at P.C. 4s. 6d. per yard super." That was brought out at 5s., and 72*l.* was the sum fixed to be paid for it. The work being completed, the stone company debited the builder with the amount, and procured an order from him, and the architect purporting to act under clause 28 certified that this amount should be paid to the stone company, but did not certify the amount as due to the builder. A question having arisen between the trustee of the builder under a deed of assignment and the stone company as to which of them was entitled to this sum which had been paid into Court by the building owner, the point came before the Court on an interpleader issue. The Court considered that if this was a provisional sum, then the matter was concluded by the decision of the Court of Appeal in Hobbs *v.* Turner (1902) in which it was held under a clause in a building contract similar to clause 28 that on a claim against him by the merchant the building owner remained the principal, the builder only acting as his agent, and, therefore, that the building owner was liable to the merchant.

The question whether this was a provisional sum had, therefore, to be decided, and some distinction appears to have been attempted to be made between a sum provided for a particular purpose or a sum provided for a particular class of work, and it also seems to have been contended that the reference to prime cost was evidence that the architect should have control so as to bring the same within clause 28. However this may be, this sum was for material supplied, or for work to be done by a special tradesman, and clearly within clause 28, and the Court held it to be a provisional sum, and, on the authority of Hobbs *v.* Turner, that the stone company were entitled to it. This being an interpleader issue, equitable considerations arose, and apart from the above considerations the Court intimated that the merchant could make out a trust in his favour even if the builder were paid the money, whilst in the circumstances of this case the builder had no certificate for this sum to enable him to enforce payment.

The point that this case draws attention to appears to be the importance of defining what are provisional sums, since the definition may affect the rights of the various parties to payment under clause 28, as interpreted in Hobbs *v.* Turner. That decision it is difficult to reconcile with clause 20, but possibly that clause did not exist in the contract under consideration in that case. It is, as appears from the statement in "Hudson on Building Contracts," difficult to give a general definition of what is intended by provisional sums, and we believe no legal definition exists, but there is no difficulty in defining this question clearly in each particular contract, and the point deserves special attention on the part of those entering into building contracts.

Sewering of Streets.

A question was raised in the case of Bloor *v.* Beckenham Urban District Council (current "Law Reports") under sect. 150 of the Public Health Act, 1875, which gives power to an urban authority "if a street (not being a highway repairable by the inhabitants at large) is not sewered to their satisfaction" to call upon the owners or occupiers of premises abutting on the same to sewer it, and in default of action on their part to carry out the work and to recover the expenses from such owners and occupiers. The appellant was an owner of premises abutting upon a street of the above description, and he had been sued in respect of apportioned expenses, and the justices had made an order against him. The Court had to decide whether the justices were justified upon the facts in so holding. Up to the year 1881 the houses were drained into cesspools, and the surface water was carried away in channels at the side of the road constructed by the owners of the land upon which the road was made.

In 1881 the local board, under a scheme for draining the district, laid a soil sewer or 9-in. pipe, which was sufficient to also carry the surface drainage, but not of a character such as would have been constructed to carry both soil and surface water. The surface water continued to be carried off as before. The original scheme was for a complete drainage system, but the surface water drains were intentionally omitted. In 1891 notices had been served on the owners to do certain work to enable the authorities to take over the road, but the notices were suspended on the frontagers undertaking to do certain repairs and maintain the road. In 1904 the present notices were issued to compel the frontage owners to provide efficient surface water drainage. There had been no change in the number or character of the houses, and on the part of the appellant it was contended that the street was not one "not sewered to the satisfaction" of the local authorities. The Court held that the justices had rightly dealt with the question of fact, and distinguished the case of Bonella *v.* Twickenham Local Board, where a sufficient sewer having been taken over by the local authorities, it was held that after a lapse of time they could not take proceedings under the section, since in the present case upon the evidence there was nothing to show that in 1881 the authorities considered the road to be sufficiently sewered. The original scheme would have provided for the surface drainage, and made a complete system, but it was abandoned, and proceedings were not then taken under sect. 150. Subsequently, in 1891, proceedings under the section were again abandoned at the request of the frontagers, and the Court considered these facts as evidence that the local authorities had never considered the road to be sewered to their satisfaction.

Compensation for Minerals Left Unworked.

The case of Rugby Portland Cement Company *v.* London and North-Western Railway Company, noted the *Builder*, May 30 last, has reached the Court of Appeal, where the decision was reversed. The railway company had constructed their line under a private Act (3 Will. 4 c. xxxvi.) passed before the Railways Clauses Consolidation Act, 1845, but which, as far as the compensation clauses were concerned, did not differ materially from the later Act. Under this private Act mines and minerals, including limestone, were excepted from the purchase of lands. The plaintiffs were owners in fee simple of the lands and minerals, and they carried on business as cement manufacturers. They wished to work the limestone near and under the railway, and notices to treat having been given, the matter went by consent to arbitration. The questions for consideration were the amount of compensation to be paid (1) in respect of limestone near the railway; (2) of limestone under the railway.

The plaintiffs contended that the compensation payable was the value of the stone to them less the cost of getting it, and on this basis the value of the limestone near the railway was assessed at 6,074*l.* The arbitrator found, however, that the plaintiffs possessed other stone equally available, and having regard to this fact found the market value to be 523*l.*, and the Court below had accepted this latter figure. A somewhat similar contention was raised in the case Eden *v.* North-Eastern Railway Company, but the House of Lords held that the compensation payable was the value of the minerals required to be left unworked (see the *Builder*, "Notes," July 20, 1907). The distinction between that case and the present seems to be that in Eden's case, as the coal was raised for sale, its value represented the profit which would be made if it were raised and sold, whereas in the case under consideration the limestone, owing to difficulties of transit, had no market price, strictly speaking, although it had a special value to the plaintiffs, and the judge appears to have differentiated the case on this ground. The Court of Appeal, following Eden's case, have reversed this finding, and assessed the compensation for the limestone near the railway at the higher figure. As regards the stone under the railway, there was a question whether the plaintiffs were entitled to work it at all. The Court below decided in their favour, but the majority of the Court of Appeal held on the special provisions of the private Act, which differ in this respect from the Railways Clauses Consolidation Act that the stone could not be worked without infringing the provision contained in sect. 58, that no shaft, pit, or quarry shall be dug, sunk, or made "in" the railway. The claim for stone under the railway was, therefore, disallowed.

Trade Catalogues.

We have received from the General Electric Company, of Queen Victoria-street, their new illustrated catalogue of measuring instruments. Full descriptions are given in it of many new and novel types of instruments, some of which were shown at the Royal Society and the Institution of Electrical Engineers this year. We were particularly struck by the new type of Aron prepayment meter, which has been officially approved by the Board of Trade. It is a great improvement to have a dial indicating clearly the total number of coins inserted, and the amount standing to the credit of the customer. A device is also provided which automatically closes the slot when the maximum number of coins is inserted, and thus prevents the gear being damaged. The price of the meter is comparatively low. Another novel device is a cost indicator which shows the consumer at a glance the cost per hour of the current being consumed. It should prove useful to large consumers. They also sell a very cheap lamp-testing instrument, by means of which the current and power taken by a lamp can be at once told. This catalogue shows that a very great improvement has recently taken place in the design and manufacture of electrical measuring instruments.

The Chicago Pneumatic Tool Company (British Agents, the Consolidated Pneumatic Tool Company) send us a catalogue of their Franklin air compressors, which are built in over 100 sizes and styles, suitable for the operation of pneumatic tools of all kinds, pumping natural or artificial gas, driving pumps and other machinery, working railway signals, testing and charging railway air brakes, sinking caissons, and for every purpose in which compressed air is employed. The types of compressor illustrated and described in the catalogue include single, duplex, and compound compressors driven by steam and belt, single and duplex compressors geared to electric motors, a single compressor driven from an electric motor by silent chain gear, and a self-contained portable combination of a single compressor geared to a gasoline engine. Full particulars and sizes are quoted for most of the machines, and the catalogue concludes with illustrations and dimensions of air receivers for compressors of small, medium, and large capacity.

THE BUILDER

SEPTEMBER 12, 1908.

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MEETINGS.

SATURDAY, SEPTEMBER 12.

Northern Architectural Association.—Excursion to Hexham.

Society of Architects.—Visit to the New Selfridge Building in Oxford-street, 3 p.m.

Fifty Years Ago.

FROM THE *Builder* OF SEPTEMBER 11, 1858.

STREET ARCHITECTURE.

WHILE considerable advances are being made in architecture generally, our street architecture seems still for the most part in a very neglected and unsatisfactory state. In many cases no architect is employed, or he is prohibited by his employer from departing from the beaten track, on the grounds of (supposed) economy, or the requirements of his business, or from mere conservatism and disinclination to do anything unusual. The ordinary business front consists, on the ground floor, of one large void, which is filled with glass. Above this is a bressummer, which carries the first floor, and on which is built a plain brick wall, with holes in it for windows. The front wall is invariably finished with a level parapet whatever may be the shape of the roof. A favourite form of roof is what is known as the V roof, specimens of which may be seen in abundance in leaving London by the Brighton or Blackwall railways. Where uniform rows of houses are built with these V roofs, the backs of the houses present a series of gables, half a gable belonging to one house and half to the next, while the fronts have the usual level parapets. The bressummers over the shop-fronts are usually concealed by an entablature of joinery, or lath and plaster work, stopped at the ends by gummy cement consoles, scarcely varying in pattern, and which are bought "ready-made," just as one would purchase a number of bricks. The fronts above the bressummer are faced with malms, with those weak, wretched, deceptive things called "gauged arches" over the windows, and the parapets are finished with a "neat" Portland or York coping, or a slight variation is, perhaps, made by the introduction of cement "dressings" to the windows, and heavy cement cornices to the parapets; or the entire fronts are rendered with Portland cement, carefully "jointed" to imitate stone, with a great redundance of "dressings" round the windows, and heavy cornices to the parapets. Such are, or at any rate, have been our usual stereotyped street fronts.

*** We have got rid of the imitation jointing, but instead of it we have plenty of instances of imitation arches, with wide spans of small or no curvature, which we know could not carry the superstructure unless they had concealed support in the rear. It is depressing to reflect how much of what is there said about shop architecture in our streets fifty years ago is still true. There are some fine examples of recent shop-front architecture, but the greater part of it is still very bad.—ED.

Illustrations.

DESIGN FOR LONDON COUNTY HALL.

THIS is a perspective drawing of a design for the London County Hall by Mr. A. Gilbert Scott, which was exhibited at the Royal Academy this year.

The style is rather too château-like for an important municipal building; it does not suggest the town hall of a great capital; it is difficult perhaps to say exactly what class of building it does suggest. But there is no doubt on one point, that there is something of architectural genius about the drawing; something entirely removed from the commonplaces of architectural design. In this respect we were struck with it the moment we saw it at the Royal Academy, and immediately requested the author to let us have the opportunity of publishing it.

Mr. Scott sends us the following remarks in his object in the design:—

"Of course, owing to the comparatively short time allowed for the designing of so large a building, the design is in comparatively crude state and would stand some more working up.

As shown on the plan, the main entrance is from Westminster Bridge-road—a raised road way 100 ft. wide, leading across the courtyard to the main doorway. This would give a fine view of the South Court on entering, each of the large courts being 165 ft. square.

The main idea of the plan was to take advantage of the size of the site, provide fine courtyards, avoiding, of course, all well-holes, which are inexcusable on a site of this magnitude. It is curious that none of the exhibited designs showed any attempt to treat the courtyards in any way; some certainly started with a courtyard at one end, but gave in after that, and on one of the designs I counted thirty-two courts, or wells.

It is interesting to note that the whole of this building could be placed comfortably within one court of Inigo Jones's Whitehall scheme. The height from roadway to the top of the cornice (which is 7 ft. deep) is 108 ft.; while from the water it would be about 134 ft. This height is very necessary if the building is to tell from across the river; Somerset House is about 112 ft. from water to balustrade.

The materials were to be Cornish granite up to the second-floor windows, Portland stone above, and lead roof.

The Council Chamber spreads out at the gallery level to 100 ft. diameter, the 70 ft. dome being carried on eight arches, and the whole lit from a large "eye" in the dome.

This was to have been carried out in white plaster and black marble, together with the entrance-hall and staircase."

HOUSE AT WOKINGHAM.

THIS house is built on the site of an old one about a mile to the south of Wokingham. The ground is well timbered.

The materials used are Sussex clamp bricks with deep red Wrotham "dressings" and groins. The roof is of deep red hand-made Wrotham tiles.

The building work generally was done by Mr. J. B. Seward, of Wokingham; hot water and heating by Messrs. Renton & Gibbs, of Reading.

Mr. Ernest Newton is the architect. The drawing was exhibited at the Royal Academy.

PROPOSED SCHOOL BUILDINGS, BAZLEY-ROAD, NORTHENDEN.

THE above Elementary Council School is in one story and is to be erected for the Sale and Ashton District Sub-Committee of the Sale County Council. The accommodation provides for 250 mixed scholars and 150 infants.

The single central hall is for the use of the above two divisions. In addition there is accommodation for a practical elementary science room, a manual instruction room, cookery-room, laundry, and house-craft centre. The heating will be by the low-pressure hot-water system, generated in the basement and conveyed to the radiators and pipes on the ground floor. All class-rooms have cross-ventilation in addition to the usual ventilation provided.

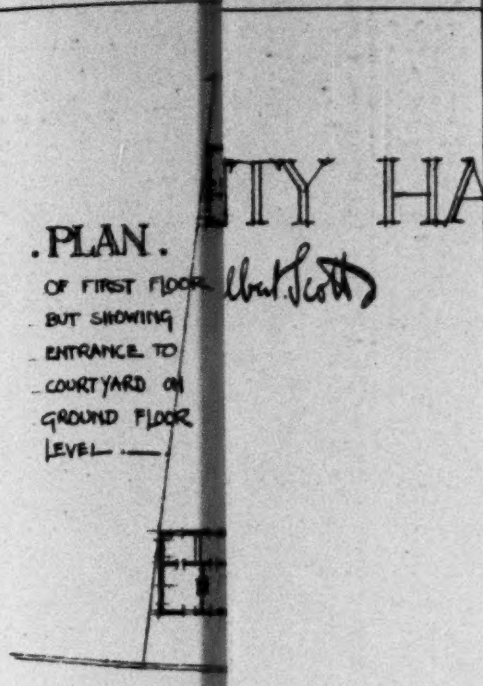
The outside walls will be faced with Accrington pressed bricks with dressed stone facings. The roofs to be covered with seconds Velinheli slates over roof boarding. The floors, entrances, and corridors to be finished with terazzo, the floors of class-rooms to be of pitch-pine 1¼-in. blocks, laid herring-bone. All carpenters' work to be best quality red deal and joinery work to be selected pitch-pine, stained and varnished. The lighting to be by gas-burners fitted with incandescent mantles.

The selected architects of the competition, which was a limited one, are Messrs. Mangnall & Littlewoods, Manchester.

Competitions.

WARDS FOR ISLINGTON WORKHOUSE.—At a meeting of the Islington Board of Guardians on September 3, the Accommodation Committee reported having consulted with Mr. William Lockwood, architect, as to the plans for the extension of the receiving wards at the St. John's-road Workhouse. The Committee had also considered a letter submitted by Mr. Lockwood from the assistant architect of the Local Government Board, in which certain alterations were suggested. Revised sketch plans on the lines indicated by the assistant architect of the Local Government Board had been prepared, and showed accommodation for children by the omission of the living-rooms of the porter and portress. Mr. Lockwood, in reply to questions, stated that the proposed alterations would not cause the original amount of 2,000*l.* to be exceeded. The Committee had therefore instructed Mr. Lockwood to draw up amended plans on these lines and submit the same to the Local Government Board for their approval.—Subsequently a letter was submitted to the Guardians from Messrs. F. H. Greenaway and J. E. Newberry, architects, expressing regret to notice in the public Press that the Board had decided not to consult them, although the assessor in the competition (Mr. Lewis Solomon) had pronounced their plans to be the best. Messrs. Greenaway & Newberry wrote that, while in no way questioning the action of the Guardians in the matter, they desired to point out that, as their designs were placed first for both the vagrant and receiving wards, they considered they might reasonably have expected to be consulted. The Guardians had adopted other plans on the ground that they were the most economical, but Messrs. Greenaway & Newberry emphasised that no limit of expenditure was stated in the instructions sent to competing architects, and if the Board had afterwards decided to expend only a limited amount it would have been only right that the architects whose designs were placed first should have had an opportunity of showing what they should propose to do with that limitation. In conclusion, the letter expressed the hope that when the subject of the vagrant wards comes up the Board would consider the writers' claim to be consulted.—The communication was referred to the Accommodation Committee.

ELLESMERE PORT FREE LIBRARY.—The designs of Messrs. Sproat & Warwick, architects, of Liverpool, for the Ellesmere Port Free Library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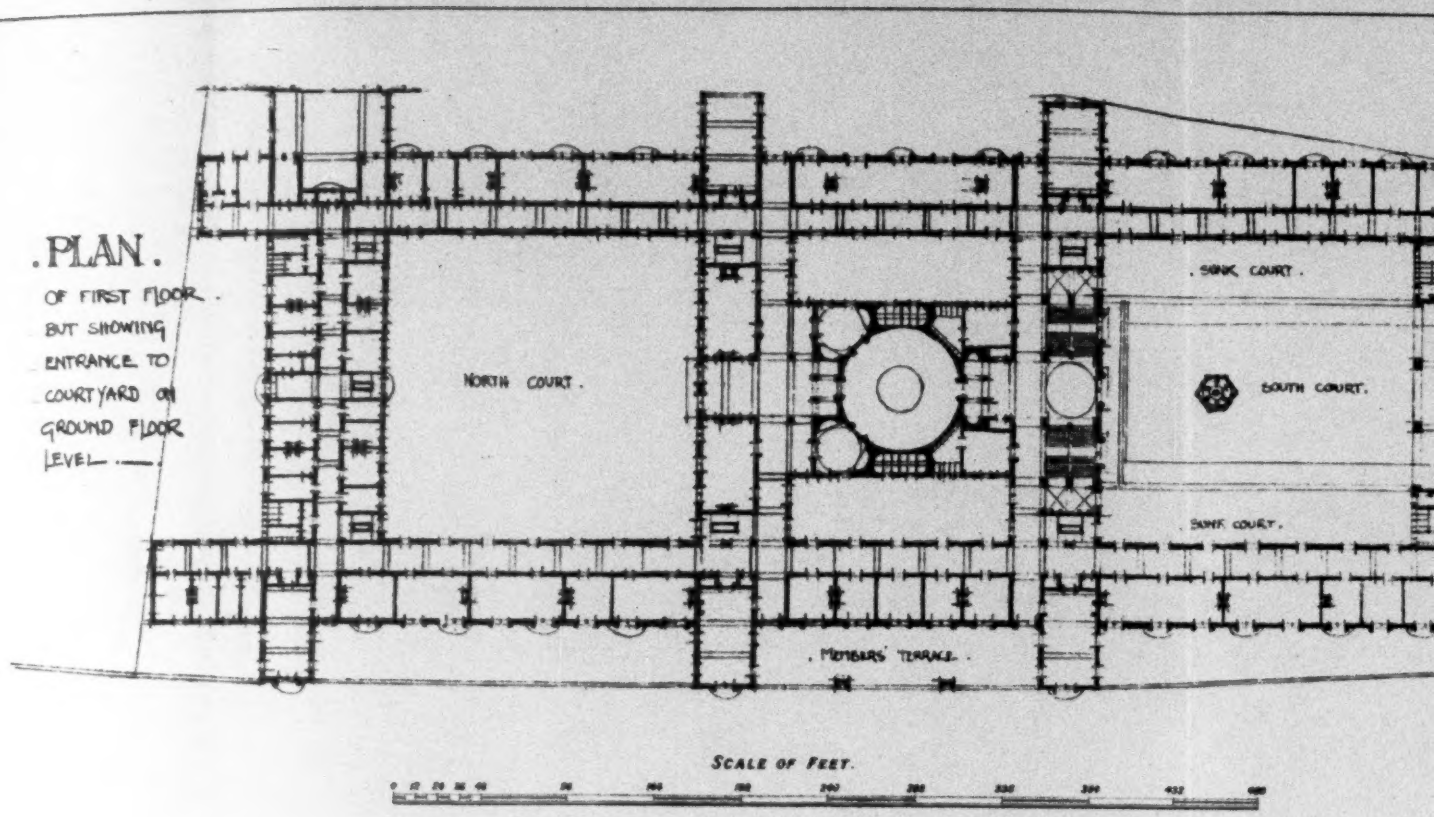
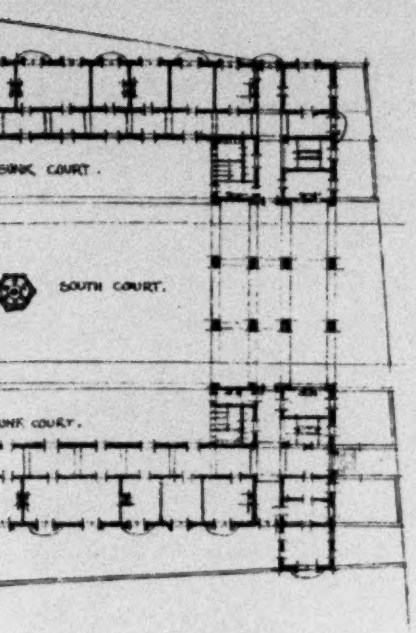
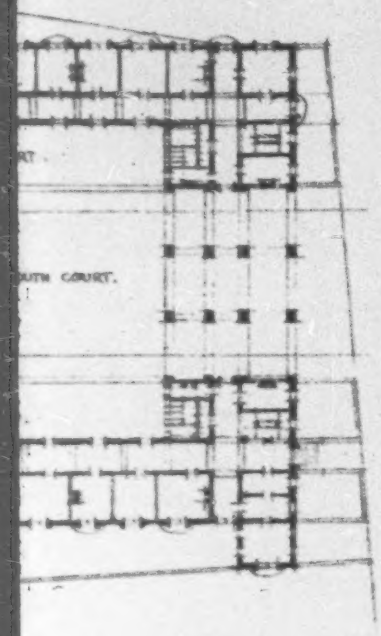




NEW COUNTY HALL.

A DESIGN BY A. Gilbert Scott



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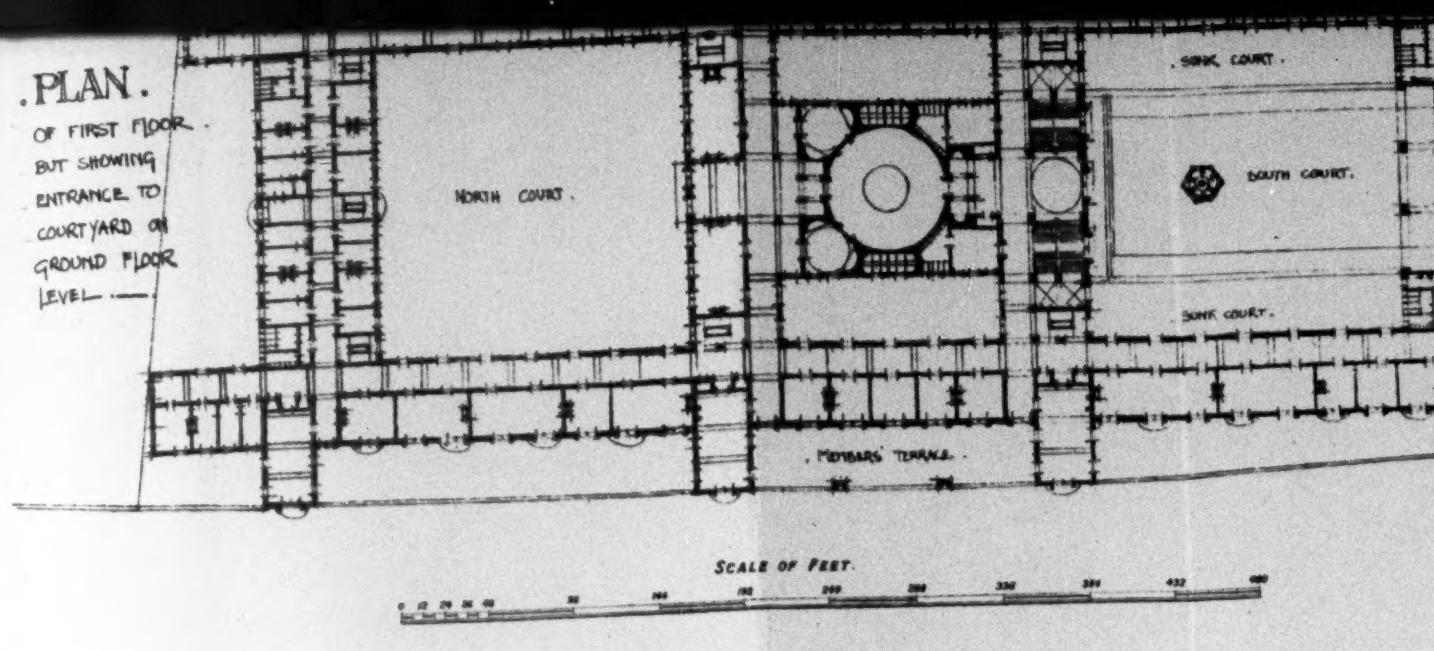

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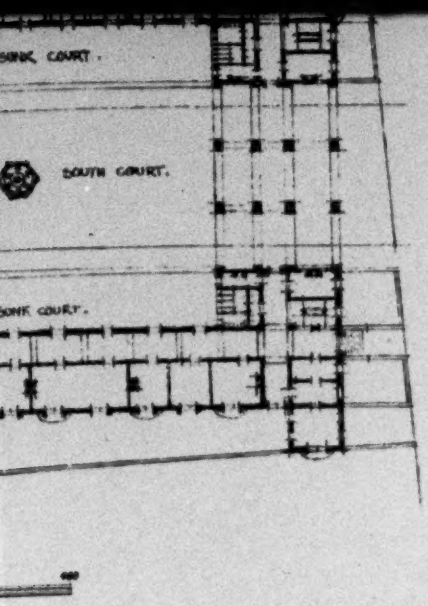

NEW COURT HALL.

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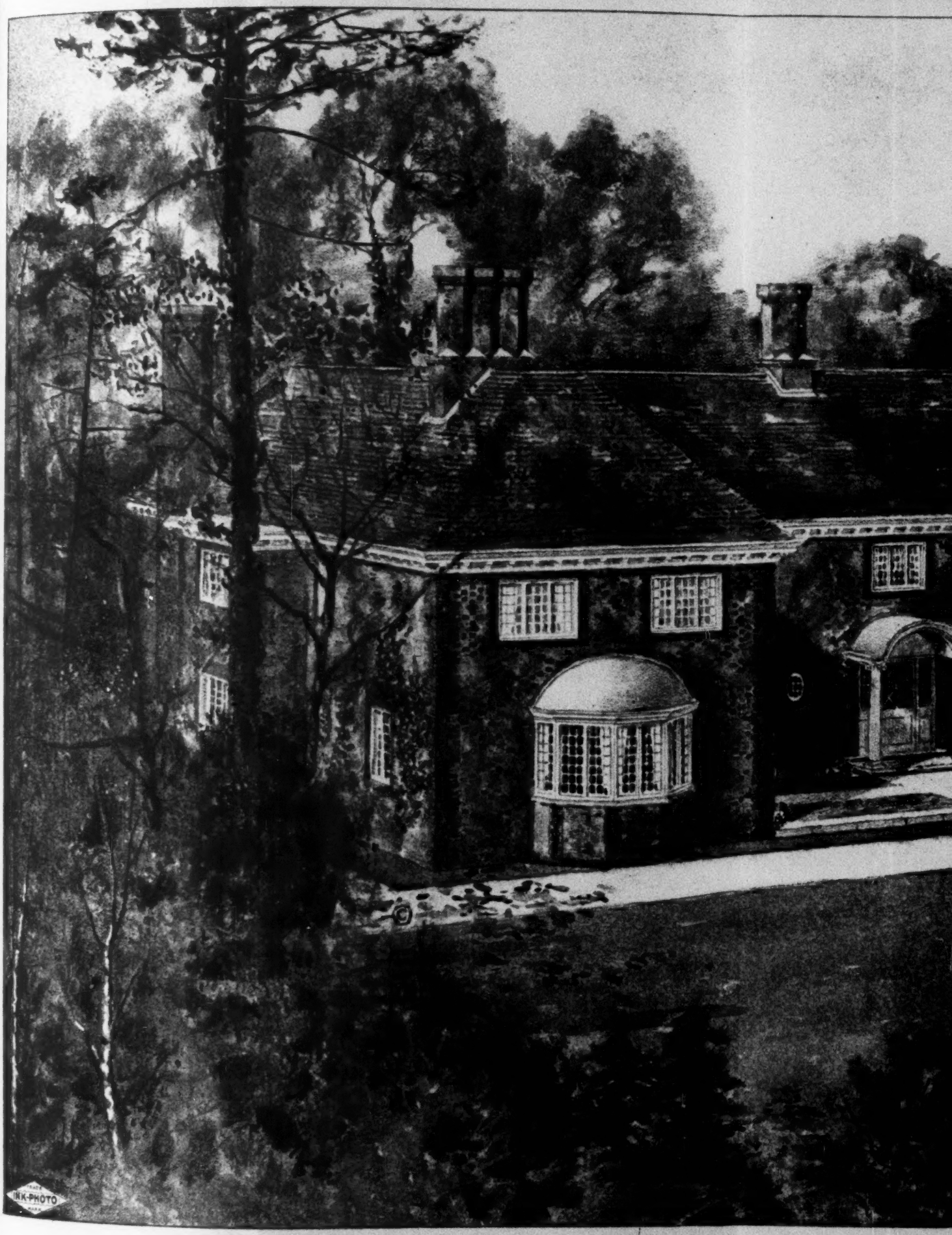

HOUSE AT WOKINGHAM: GARDEN FRONT.—

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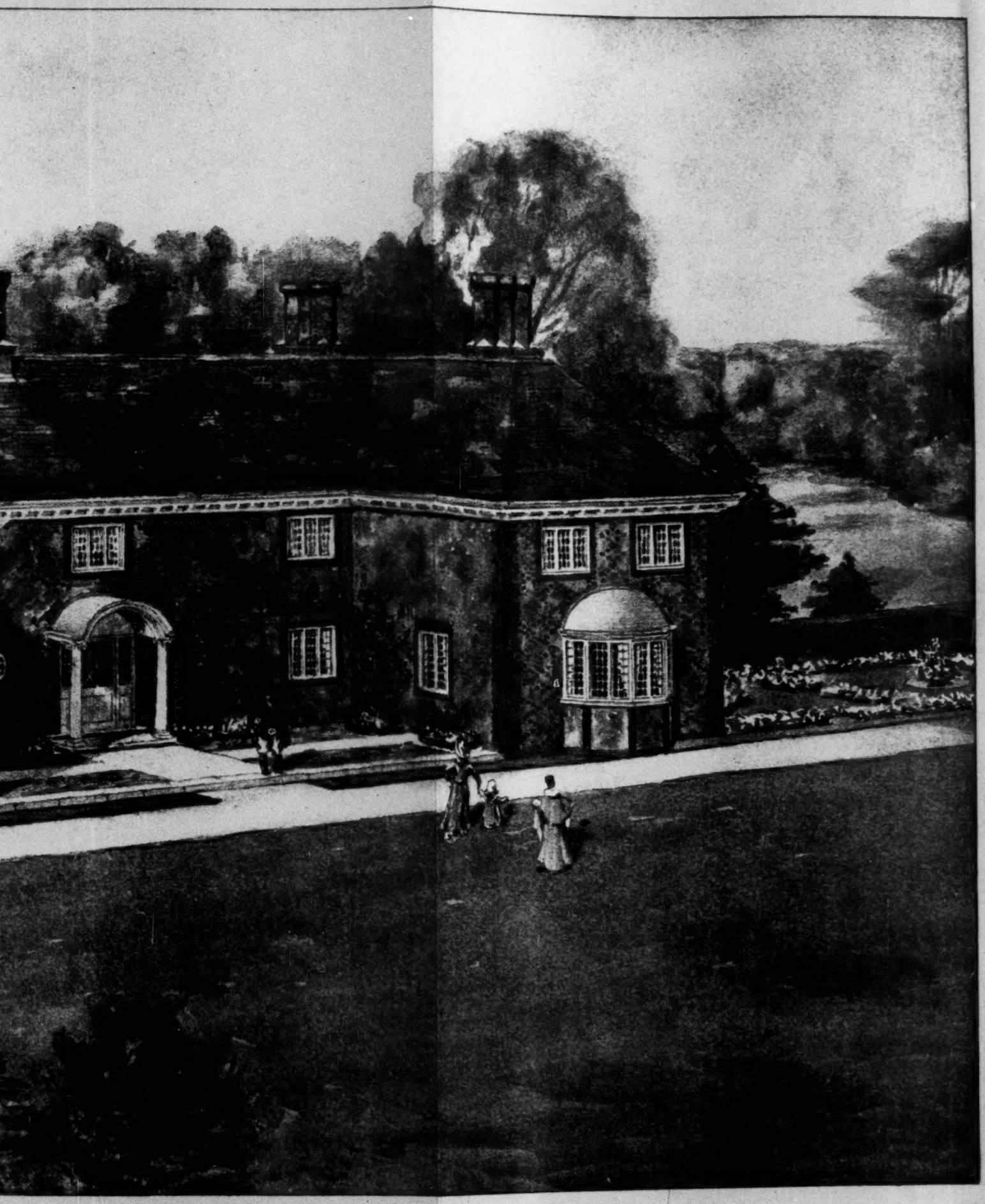

GARDEN FRONT.—Mr. Ernest Newton, Architect.

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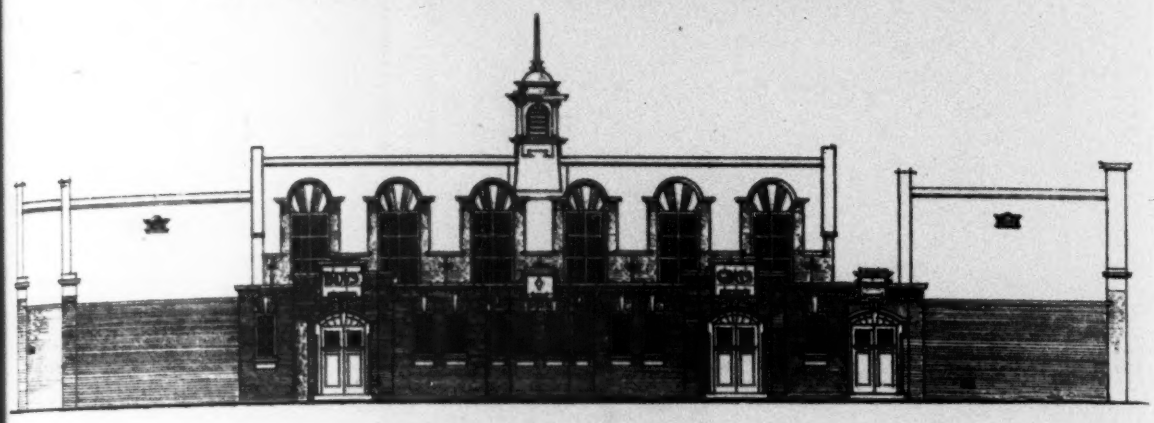

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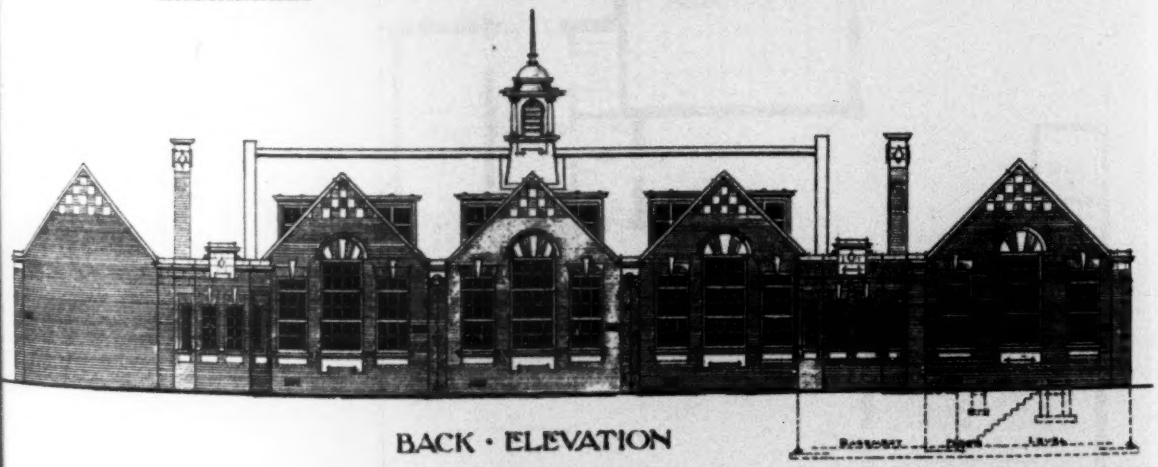
NORTH · SIDE · ELEVATION



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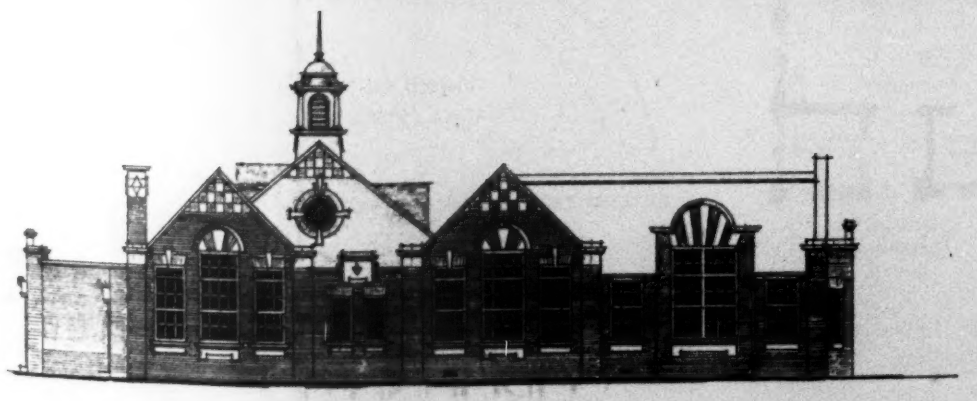

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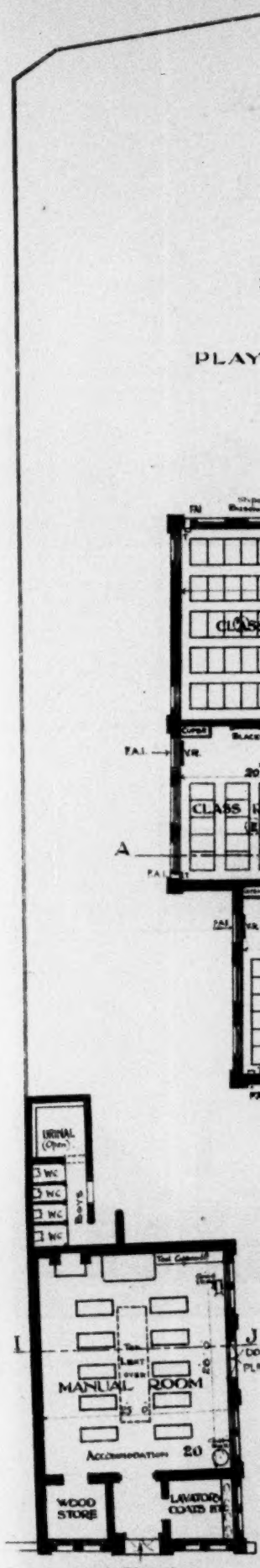

Scale of

BOYS PLAYSHED

GIRLS and INFANTS PLAYSHED

BOYS

PLAYGROUND

GIRLS AND INFANTS

PLAYGROUND

CLASS ROOM

MALE TEACHERS ROOM

CLASS ROOM

CLASS ROOM

CLASS ROOM

FEMALE TEACHERS ROOM

INFANTS CLASS ROOM

INFANTS CLASS ROOM

CLASS ROOM

CORRIDOR

CENTRAL HALL

INFANTS CLOAK ROOM

CLASS ROOM FOR DAIRS

ELEMENTARY SCIENCE ROOM

CLOAK CORRIDOR

CLOAK ROOM

HEADMASTERS ROOM

CLOAK ROOM

CORRIDOR

INFANTS ENTRANCE

BOYS ENTRANCE

GIRLS ENTRANCE

MANUAL ROOM

DOOR TO PLAYGROUND

Accommodation 20

LAVATORY COATS &c.

GARDEN FOR NATURE STUDY

DOOR TO PLAYGROUND

ENTRANCE COOKERY Rm

SEATS

LAUNDRY Accommodation 30 & 10

YARD

KITCHEN

SCULLERY PANTRY

STORE

SITTING ROOM

DINING ROOM

ENTRANCE TO MANUAL SCHOOL

BOYS ENTRANCE

GIRLS ENTRANCE

ENTRANCE TO LAUNDRY

← HOUSECRAFT CENTRE →

B A Z L E Y R O A D

· GROUND · FLOOR · PLAN ·

MARSHALL AND LITTLEWOOD ARCHITECTS

PHOTO-LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

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have been selected in a limited competition by Mr. J. Swarbrick, F.R.I.B.A., of Manchester, the assessor appointed by the Council. The Council have approved the assessor's award.

COUNTRY HOUSE, WALSALL.—In the competition for a sketch-plan showing design for house in country district, that by Mr. Bernard A. Porter, of 88, Colmore-row, Birmingham, has been placed first, and he has been instructed to act as architect.

BOOKS RECEIVED.

CRANES: THEIR CONSTRUCTION, MECHANICAL EQUIPMENT, AND WORKING. By Anton Böttchen. Translated by A. Tolhausen, C.E. (Archibald Constable & Co. 42s.)

SIR CHRISTOPHER WREN. By Lena Milman. (Duckworth & Co. 7s. 6d.)

THE BUILDING MECHANIC'S READY REFERENCE. By H. G. Richey. (Chapman & Hall.)

HAWORTH'S PRACTICAL TIMBER MEASURER. (Offices of *Timber News*. 1s. 6d.)

OLD ENGLAND: HER STORY MIRRORED IN HER SCENES. By W. Shaw Sparrow. Pictures by James Orrock, R.I. (Eveleigh Nash. 24s.)

A TREATISE ON COLOUR MANUFACTURE. By George Zerr and Dr. R. Rübeuchamp. (Charles Griffin & Co. 30s.)

PROPOSED NEW BUILDINGS IN LONDON AND SUBURBS.

BATTERSEA.—Block of one-story offices in Falcon-road, for L. and N.W. Railway Company, Messrs. H. & E. Lea, builders, Camden Works, Great Church-lane, Hammersmith; twenty houses in Wakehurst-road, Mr. F. H. Hooper.

Hackney.—Two new warehouses and additions to existing warehouse, Belsham-street, Messrs. Hodson & Whitehead, architects, 7, Finsbury-square, E.C.; six houses, Ravensdale-road, Stamford Hill, Messrs. R. J. Rowland & Sons; sixteen houses, Holmbury-view, Upper Clapton, Mr. F. Collins; four houses, Warwick-road, Upper Clapton, Mr. G. H. Paine, architect, 62, Moorgate-street, E.C.; workshop, De Beauvoir-road, Mr. G. Keetch, builder, 49, De Beauvoir-road, Hackney; iron gymnasium, College-lane, in connexion with London County Council's residential school, Homerton, Mr. W. Harbrow; structural alterations to shops at Northumberland-mansions, Lower Clapton-road, Mr. C. E. Gooding; offices, Plover-street, Hackney Wick, Mr. A. E. Bradshaw; six houses, Leabourne-road, Messrs. W. M. Dabbs & Son, builders, 19A, Goulton-road, Lower Clapton; additions to factory premises at rear of 146, 148, and 150, High-street, Homerton, Mr. G. S. Garey, builder, 48A, Old Street-hill Clapton Common, N.E.

New railway station at Chapter-road, Willesden. Mr. Matthew Garbutt, architect, Bishop's-road Station, Paddington.

East Barnet.—Six houses, Park View-crescent, New Southgate, Messrs. Moore & Nield, architects, 20, New Bridge-street, E.C.; two houses, Brunswick-grove, Brunswick Park, Mr. Cooper; block of maisonettes, Warwick-road, Mr. Milnes.

Watford.—Iron mission church, Quickley-lane, Abbots Langley, Messrs. Swannel & Sly, architects, High-street Rickmansworth; house, shop, and stables, Breakspeare-road, Abbots Langley, Mr. W. Carter; cricket pavilion, Aldenham School, for Old Boys' Committee.

Prospective rebuilding of confectionery shop (after fire) at Harrow Hill, for Mr. Lewin.

Poplar.—Additions to premises in Roach-road, for International Harvester Company, 80, Finsbury-pavement, E.C.; public conveniences (1,000*l.*) at Bow, Mr. Harley Heckford, Borough Surveyor, Town Hall, Poplar.

Addition (saloon lounge) to Amersham Arms public-house, 388, New Cross-road, S.E., for Mr S. P. Janes.

Mayfair.—Buildings, Aldford-street, Messrs. Foster & Dicksee, builders, Rugby; alterations, etc., residence, Curzon-street, Messrs. Geo. Andrews & Co., builders, 39, Craven-road, Lancaster Gate, W.; alterations to residence, Grosvenor-street, Messrs. Dove Brothers, Ltd., builders, 15, Studd-street, Islington; stabling, etc., Reeves-mews, Messrs. Maple & Co., Tottenham Court-road, W.

Adaptation of premises, Victoria-street, S.W., for branch of Williams Deacons Bank. Messrs. W. Cubitt & Co., builders, 258, Gray's-inn-road, W.C.

Norbury.—Shops and houses. Messrs. Whitehead & Co., builders, Clapham-road, S.W.

Alterations to Dundee Dye Works, Tottenham Court-road, W. Messrs. Dove Brothers, Ltd., builders, 15, Studd-street, Islington.

Rebuilding branch, in High-street, Croydon, of London Joint Stock Bank. Mr. E. J. Saunders, builder, 48, Wellesley-road, Croydon.

Sutton.—Extension of premises in High-street, of Wootton Brothers, drapers, Mr. Wm. Salter, builder, Webber-street, Lambeth; shops and residences, Messrs. Morgan, Baines, & Clark.

New Clubhouse on site of old War Office in Pall Mall, for Automobile Club. Mr. Edward Keynes Purchase, architect, 20-22, Maddox-street, W.

RATES OF WAGES AND HOURS OF LABOUR IN THE BUILDING TRADES.

ACCORDING to the report of the Labour Department of the Board of Trade on the changes in rates of wages and hours of labour in the United Kingdom, it seems that with regard to the building trades the changes in regard to wages affected comparatively few workpeople. The net effect was a small increase in wages, in contrast to the changes in the years 1904-1906, which resulted in net decreases. In the years 1898-1903 there were net increases in each year. Employment continued dull during the year, but judged by the mean percentage of trade unionists unemployed in those trades (carpenters and plumbers) for which statistics are available, it was rather better than in the three preceding years. The mean percentage was 6·7 in 1907, as compared with 7·2 in 1906, 8·3 in 1905, and 7·7 in 1904. The mean for the ten years 1898-1907 was 4·8 per cent. The total number of workpeople whose wages were changed during 1907 was 9,928, or only 0·9 per cent. of the total number employed in the building trades. The number affected in England and Wales was 9,677; in Scotland, 71; in Ireland, 60; and in the Isle of Man, 120. Of these workpeople 9,910 received advances in their weekly wages, amounting to 234*l.*, while only 18 sustained decreases, amounting to 2*l.* The computed net amount of change in the weekly wages of the workpeople affected was thus an increase of 232*l.*, as compared with decreases of 157*l.* in 1906, 1,038*l.* in 1905, and 884*l.* in 1904. The workpeople who obtained advances included 2,500 carpenters and joiners, 2,000 painters, 1,300 bricklayers, and 450 plumbers at Liverpool; 1,450 painters and decorators at Manchester; 750 carpenters and joiners, and 220 bricklayers at Birkenhead; and 400 bricklayers at Coventry, the advance in each case being one of ¼d. per hour. The only decrease in 1907 was one of ¼d. per hour to eighteen plasterers at Kirkcaldy.

The extent to which each of the trades included in this group was affected was shown in the following table:—

Occupation.	Net Increases.		Net Decreases.		Total.	
	Workpeople affected.	Total Weekly Amount.	Workpeople affected.	Total Weekly Amount.	Workpeople affected.	Net Increase (+) or Decrease (−) per week in Wages.
		£		£		£
Bricklayers	1,995	49	—	—	1,995	+ 49
Masons	34	4	—	—	34	+ 4
Carpenters and Joiners	3,609	45	—	—	3,609	+ 45
Slaters	15	1	—	—	15	+ 1
Plumbers	534	12	—	—	534	+ 12
Plasterers	—	—	18	2	18	− 2
Painters and Decorators	3,723	123	—	—	3,723	+ 123
Labourers	—	—	—	—	—	—
Total	9,910	234	18	2	9,928	+ 232

The advances in the wages of painters accounted for more than half the net amount of increase, just as in 1906 the reductions in their wages accounted for more than half the net amount of decrease.

The number of workpeople whose weekly hours were changed during 1907 was 14,432. Of these, 14,416 had their hours reduced, and 16 had them increased. The reductions amounted in the aggregate to 12,444 hours, and the one case of increase to five hours, the net result of all the changes being thus a reduction of 12,439 hours per week. The principal changes were those affecting 2,500 carpenters and joiners, 2,000 painters, 2,000 builders' and bricklayers' labourers, 1,300 bricklayers, and 450 plumbers in Liverpool, whose working hours (taking the average for the whole year) were reduced by one hour per week. At Glasgow 3,000 carpenters and joiners had a reduction of one hour per week during thirteen weeks of the summer period; and at Dundee 560 masons and 150 builders' labourers a reduction of one hour per week throughout the year, and 300 carpenters and joiners, 280 painters, and 160 plumbers a reduction of one hour per week during twenty-two weeks of the summer period.

Correspondence.

THE WORLD'S TIMBER SUPPLY.

SIR,—The leading article in your issue of September 5 on the subject of a possible scarcity of timber in the near future shows conclusively that a timber famine is inevitable unless more care is taken with the present stock, and some system of replanting is generally adopted. There is great danger that the estimates of the present quantity available are unreliable unless a very low estimate per acre is taken, as the actual experience of this company will show.

This company holds 83,200 acres of timber leases in British Columbia; but the cruisers employed to select the timber were compelled during two years to cruise well over 1,000 square miles of country before they found timber lands of sufficient quality and density to justify their selection.

It will be admitted that there is no more heavily timbered land than that which exists in British Columbia, but it will be seen that there is a large acreage even there covered with scrubby timber of little value. It is this actual condition of things (which can only be found out by expert examination) which makes an acreage calculation of very doubtful accuracy.

M. T. WIGHAM,
Secretary of the Canadian
Pacific Sulphite Pulp Company, Ltd.

THE PATENTS AND DESIGNS ACT.

SIR,—It is, indeed, news that, as contended by Mr. J. A. Glazier, "the presumptive reason for foreign and British holders of British patents working their patents abroad is that the cost of so doing is less than if they established works here." Is it not really to prevent the article patented from being made here and thereby competing with the manufacturer who has patented it in his own country? Doubtless it is generally more convenient for a German, Frenchman, American, etc., to make the goods in his own country, but unless secured by foreign patents he may find his goods undersold both at home and abroad. Is it not a fact that some articles patented here are not solt in this country? Probably the same thing occurs in other countries.

As an ethical question it may no doubt plausibly be argued that the acceptance of a fee in the past for a patent entails upon the Government the protection of the invention for the full period of the patent, and this might be urged to the extent of a remission of the proportion of the fee for the unexpired term, which, in numerous cases, would, of course, be infinitesimal, the patent having nearly expired. It must also be remembered that under this Act patents cannot be rescinded until the expiration of four years.

Mr. Glazier is pleased to be cynical over the question of "interfering with workers who would otherwise be making goods to be exported in payment for those imported." This line of reasoning would, of course, carry us to the length of declining to make any class of goods in competition with foreigners. Just as Mr. Chamberlain had the temerity to say our colonies "would refrain from arranging tariffs in the future in order to start industries in competition with those which are already in existence in the mother country," which was, of course, absurd, and at once repudiated by the colonies.

The enormous popularity of the new Act in all political parties is significant, but the

reason alleged for their approbation by some Protectionists is that the Act is "the thin edge of protection." The absurdity of this contention lies in the fact that a patent is protection, and when it is worked outside of the country granting that protection and not in that country itself, it acts prejudicially against that country. The new Act is but a curtailment of protection.

Your correspondent says that I "suppose that increased cost will result in lowered prices." This is the antithesis of what I actually "suppose"—or wrote. J. KENNARD.

Obituary.

MR. JOHN LAMB.—The death is announced of Mr. John Lamb, who for many years was Property Surveyor and Engineer for Newcastle. Prior to coming to Newcastle the deceased lived at Kensington, Liverpool. In 1855 he was appointed Surveyor under Gateshead Corporation. In 1862 he resigned the office to undertake similar duties under Newcastle Corporation, and afterwards he took up the work, with which he has since been identified, in connexion with the Grainger Estate. He was also Valuer for Newcastle Board of Guardians. Mr. Lamb was 78 years of age.

General Building News.

NEW PRIMITIVE METHODIST CHURCH, WOOD GREEN.—The new Primitive Methodist Church in Station-road, Wood Green, was opened on Saturday, August 29. It has been erected, at a cost of 1,500*l*., from the designs and under the superintendence of Mr. H. H. G. Denvil, architect, of Thornton Heath, and presents a pleasing elevation in red brick and Bath stone. Sittings for about 260 are provided, with class-rooms, vestries, and other offices, and space has been left at the rear of the buildings for the erection, at some future time, of schoolrooms. Messrs. Harston & Oxford, of Tottenham, were the builders.

METHODIST CHURCH, PALLION, SUNDERLAND.—A United Methodist church has been erected in West Moor-road, Pallion, Sunderland. The building is of red brick, with stone facings, and comprises a church and small hall, having joint seating accommodation for about 450 persons, and a vestry. Messrs. Barnes & Burton, Newcastle and West Hartlepool, are the architects, and Mr. J. W. White, Sunderland, the builder.

CHURCH IMPROVEMENTS, FARINGTON.—The Church of St. Paul at Farington is to be renovated and enlarged. Mr. J. A. Seward, architect, Preston, has prepared the plans for the work.

NEW SCHOOLS, NORTHAMPTON.—The new St. George's Schools at Northampton have been opened. They have been built by Mr. George Fisher, whose contract was for 13,185*l*., from the plans of Mr. M. H. Holding, A.R.I.B.A., of Northampton, and will accommodate 1,106 children—boys, girls, and infants.

COUNCIL SCHOOL, PENGAM.—A school has been opened at Glanynant, Pengam, by the Glamorgan County Council. The building is designed to accommodate 200 scholars, and consists of four classrooms and a central hall, with the necessary cloak-rooms, teachers' and caretaker's rooms, and store. A special room for babies is provided. The plans were prepared by Mr. D. Pugh-Jones, F.S.I., County Architect, Cardiff, and the work carried out by Mr. F. Bond, Beda-road, Cardiff, at a total cost of 2,652*l*. Mr. Morgan Williams acted as clerk of works.

INFANTS' SCHOOL, STALYBRIDGE.—A new infants' school has been erected by the parishioners of Holy Trinity Church, Stalybridge. The cost of the new building is, roughly, 800*l*., and the work has been executed by Messrs. Saxon Brothers, from plans prepared by Mr. Geo. Rowbottom.

COUNCIL SCHOOLS, BARRY.—New girls' and infants' schools have been built in High-street, Barry. The schools have been carried out according to designs and under the supervision of Mr. G. A. Birkenhead, Architect of the Barry Education Committee, at a cost of about 6,700*l*., the contractor being Mr. W. Britton, of Barry Dock.

VILLAS, EBBW VALE.—Ten villas are shortly to be erected near the Ebbw Vale Company's furnaces, Ebbw Vale, for the Queen-square Building Club, from plans prepared by Mr. J. H. Walters, architect, Ebbw Vale, Mon.

ETON COLLEGE MEMORIAL HALL.—The memorial hall erected at Eton to commemorate the Etonians who were killed in the South African War is to be opened in November. The new buildings consist of a new school hall, 140 ft. long, 55 ft. wide, and 45 ft. high; a domed octagonal library, about 55 ft. in diameter—both facing Upper School—and a classical museum. The buildings are of Portland stone and red brick, the architects being Messrs. S. K. Greenslade and L. K. Hall. A sum of nearly 40,000*l*. has been subscribed.

HOLBORN BOROUGH COUNCIL OFFICES.—The new offices of the Holborn Borough Council are now nearing completion. The building has a frontage of 115 ft. to Broad-street, and is practically in High Holborn, as there are no buildings in front of it to obscure the view of that thoroughfare at the point where it joins Broad-street. The site is practically square, the depth being approximately 120 ft., and the structure is 90 ft. in height from the pavement to the top of the gable. The Holborn Public Library and the old offices of the Borough Council are retained intact in the new plan, and have been in use without interruption during the execution of the new work. Internally each floor has a large circular hall adjoining the main staircase, and a passenger lift is provided to all floors. The staircases and halls are in marble and mosaic with a marble dado round the staircase, and the principal rooms have oak-block flooring. The electric light is installed throughout, and the building, which is of steel and concrete, is fire-resisting. The architects, selected by competition, are Messrs. Warwick & Hall. The building work was carred out by Messrs. John Greenwood, Ltd., London, and the cost, inclusive of the furniture, is about 25,000*l*.

CO-OPERATIVE PREMISES, BANBURY.—New central premises have been opened by the Co-operative Wholesale Society at Banbury. The contract for the whole of the main work has been carried out by Mr. J. S. Kimberley, of Banbury, from plans prepared by Mr. A. E. Allen. The hot-water work has been executed by Messrs. J. Mawle & Sons, and the electric wiring by the Electrical and Motor Company, all of Banbury.

CLACKMANNAN COUNTY BUILDINGS EXTENSION.—At a special meeting of Clackmannan County Council, held in the County Buildings, Alloa, plans by Messrs. Melvin & Kerr for the extension of the county buildings were approved. The estimated cost of the work is 5,000*l*.

BOARD SCHOOL, CATHCART.—A new Board school has been erected in the parish of Cathcart. The building comprises two blocks, connected by a central entrance with drill-hall, and each block provides accommodation for 600 children. There is a manual instruction room in one block and a cookery-room in the other, and a library, museum, and music-rooms have also been provided. Each of the twenty-two classrooms has a separate cloakroom, entered from either the classroom or the assembly-hall or the balcony. The architect is Mr. Andrew Balfour, of Glasgow, and the total estimated cost is 22,000*l*.

HIPPODROME, NOTTINGHAM.—The new Royal Hippodrome, Nottingham, which has been erected from the designs of Mr. Bertie Crewe, is now complete so far as the building operations are concerned. The elevation is of dark brown glazed terra-cotta, with the bays between the pilasters filled with dark red bricks. The total seating capacity will be for 2,550.

Sanitary and Engineering News.

CLUTTON WATERWORKS.—The District Council of Clutton were for some time considering various sectional schemes of water supply for sundry villages within the rural district, but upon the advice of their engineer they decided to initiate a comprehensive scheme to meet the needs of eight of the more important villages, viz., Ston Easton, Farrington Gurney, Paulton, Cameley, Clutton, High Littleton, Timsbury, and Farmborough. Arrangements were made with the Council of the Downside Abbey Estate to purchase water from their Gurney Slade springs, the College Council undertaking to set up a pumping plant and to pump water to a reservoir situate at Stockhill, near Chilcompton, on the ordnance 700 ft. contour line, and to construct and maintain a reservoir of 560,000 gallons' capacity. The agreement which was entered into provides that the District Council can take water up to a maximum of 150,000 gallons per day of ten hours, at 4½d. per 1,000 gallons, subject to a minimum payment for 70,000 gallons per day. Negotiations were completed, and the scheme was prepared in 1905-6, and received the sanction of the Local Government Board in September, 1906. The works were commenced in May, 1907, and are now practically finished.

The area of the eight villages now supplied is about 10,400 acres, or one-fourth the total area of the rural district, whilst the population of the eight villages in 1901 was 8,230 (now estimated at 8,500), being about one-half the total population of the district.

The works comprise the laying of about thirty-one miles of cast-iron mains varying in size from 8 in. to 3 in., with all the usual fittings, and above four miles of wrought-iron mains, and involved five crossings of railways and four crossings of rivers. The total weight of cast-iron pipes was 1,450 tons. Hydrants for fire purposes were fixed in the villages of Paulton, Ston Easton, and Timsbury. The supplementary reservoir erected on Timsbury Sleight is constructed of cement concrete, covered with brick arches, and has a capacity of 175,000 gallons, and the water level is about 72 ft. below that of the Downside reservoir. In practice this reservoir will supply principally the villages of Timsbury, Farmborough, Paulton, High Littleton, and Clutton, but in the event of any fracture of the mains, of cleaning or repairs to the supply reservoir at Downside, the whole of the eight parishes can be supplied from the Timsbury storage.

Water is delivered to the consumers by means of 190 pillar and wall fountains, by about 200 direct connexions to buildings, and by 108 meters for trade and agricultural purposes. The total number of houses connected to date is about 1,400, and water is therefore probably being used by about 7,000 persons out of a total population of 8,500. An interesting and unusual feature of the scheme is the considerable difference in pressure on the mains in the several villages, varying from 680 ft. ordnance in Ston Easton parish, to 273 ft. ordnance at Hallatrow, a difference of 170 lb. per square inch, necessitating careful calculations in weights and strengths of pipes and special provisions as to fittings. In order to detect future leakages or defects, four sets of automatic recording meters are installed at various positions, by which means wastage in any village can be located with ease. The total cost of the scheme is expected to be slightly over 22,000*l*.

The works have been designed by and executed under the supervision of Mr. W. F. Bird, C.E., of Midsomer Norton, his assistant-in-charge being Mr. F. E. Cullis, and the clerks of works were Messrs. S. S. Orchard, P. C. L. Winship, T. Shepherd, and A. Coles. The contractors for the whole of the works were Messrs. T. B. Cooper & Co., of Sun-buildings, Bristol, their local manager being Mr. F. T. Paterson. The cast-iron pipes were supplied by the Stanton Ironworks Company and the Staveley Ironworks Company; the valves, hydrants, reservoir fittings, and supply meters by Messrs. Ham, Baker, & Co., of Westminster: the waste-detecting meters by the Palatine Engineering Company, of Liverpool; and the pillar and wall fountains by Messrs. Glenfield & Kennedy, of Kilmarnock.

COMBINED DRAINAGE LEGISLATION.—Metropolitan Borough Councils have received a communication from the Hon. Secretary of the St. Pancras Conference on Combined Drainage, relative to the Bill introduced into the House of Commons to amend the law relating to this subject. The letter states that there appears to be little prospect of a private member's Bill dealing with the question becoming law without the co-operation of the responsible Minister of the Government, and suggests that the most effective way is for strong representations to be made by the metropolitan local authorities to the President of the Local Government Board, urging him to take over the Bill on behalf of the Government. The Councils are asked to communicate with the President on these lines.

HOUSING IN MIDDLESEX.—The annual Report of the Medical Officer of Health for Middlesex, Dr. C. W. F. Young, refers at considerable length to the question of housing. Attention is drawn to the fact that some time ago Dr. Manby made inquiry into the sanitary administration of the Brentford district, and recommended that the District Council "should without delay give effect to the provisions of Part I. and Part II. of the Housing of the Working Classes Act, 1890," and should also consider the desirability of action under Part III. As a result, it was decided to press on the work of closing old and insanitary houses, and several blocks of insanitary property were dealt with under the Housing Act last year. There is a long list of houses unoccupied as a result. The sanitary inspector for Chiswick emphasises the advantage of the system of house-to-house inspection in force in the district. Altogether 2,895 houses were inspected last year, and the paving of yard spaces received special attention. In connexion with the by-law of the Edmonton local authority, which requires that no house shall be let or occupied until it is certified to be fit for human habitation, there is evidence that greater attention is given by builders and owners to a strict observance of the building by-laws. From Feltham Dr. Morris reports

that "there are one or two doubtful areas which do not reflect much credit on the owners." The report of the Medical Officer at Hampton Wick mentions that there is a scheme in abeyance for building workmen's cottages. Part III. of the Housing Act has been adopted. At Hayes the building of new houses was not carried on to the same extent last year as in the previous twelve months, but, according to the Medical Officer, the number of houses is greater than the demand, which, he thinks, would be greater if there were cottages at a rental of 5s. to 6s. a week. From the Hendon Urban District is reported a scheme to erect fifty houses for working men at Child's Hill, where overcrowding is said to be common. It is proposed to erect altogether 1,400 houses (an average of seven to the acre) on the site of the Hampstead Garden Suburb, situated in Hendon. At Heston and Isleworth more house-to-house inspection might with advantage have been carried out if an additional inspector had been available; the staff is the same as it was seven years ago. Dr. Ransome reports from Southgate that old, insanitary cottages are lessening in number each year, and that a considerable number of new and much-needed cottages have been built by private enterprise during the year. The report relative to Staines Urban District shows that there is a sufficiency of house accommodation, and that the houses are, generally speaking, satisfactory. Two were closed by the owners in preference to carrying out requirements of the authority. At Sunbury no dwellings were condemned during the year as unfit for human habitation, but several houses on the border line have been put into a fit and proper state. At Tottenham during the last year 32 houses were completed by the London County Council, and 132 by the Peabody Trust. Writing regarding working-class dwellings at Wealdstone, Dr. G. Butler says that, although there are plenty of houses rents are very high. He strongly recommends house-to-house inspection, so that remedy might be applied to bad cases of overcrowding, want of cleanliness, structural defects, dampness, and other sanitary remissness. In none of the reports relating to the rural districts of the county is it indicated that there is inadequacy of cottages for the working class, except in the case of the Uxbridge Rural District. In this case it is reported that many of the houses are old and beyond being rendered modern, but cottages are so scarce for working men that, says Dr. Charpentier, one hesitates to close those there are, if at all habitable.

DRAINAGE AT WIMBLEDON.—The Chief Sanitary Inspector of Wimbledon, in his annual Report just issued, says that during the year the drainage systems at ninety-two houses have been entirely reconstructed, and alterations and repairs, in many instances of an extensive nature, have been carried out at fifty-two other houses. In every case where the drains have been relaid a plan has been prepared showing the work as completed, and this is filed for future reference. Of the houses redrained during the year forty-four were included in combined systems. The question as to who is liable for the relaying of combined drains is a very vexed one, and the cause of much contention on the part of property owners and agents, owing to the unsatisfactory and conflicting state of the law on the subject. It has been necessary only in the case of nine houses for the local authority to execute the work in default of the owners. In several instances the owners have willingly reconstructed combined drains at their own expense rather than contest the legal points at issue. Frequent visits of inspection during the progress of work are necessary to insure that the reconstruction of defective house drainage is efficiently carried out. On these occasions, owing chiefly to the employment of unskilled workmen, it is frequently found that sanitary fittings and traps of obsolete and objectionable patterns are being fixed; intercepting traps are fixed carelessly, thereby destroying the seal provided for cutting off aerial communication with the sewer; or that the drains are laid with insufficient fall, etc. By making these visits at short intervals the faults are discovered before the work is far advanced, and can therefore be remedied at a minimum of trouble and expense. The smoke and water tests were applied to drains and sanitary fittings on 672 occasions. All new drains had the water test applied before concreting in, and again after the ground was filled in.

SEWAGE WORKS IN EAST HAM.—The Medical Officer of Health for East Ham, in his annual Report, says that the additions to the sewage-disposal plant, mentioned in last year's report, have given every satisfaction and are working well. During the year a bacterial filter-bed has been formed, composed of clinker from the refuse destructor. When completed this will be about an acre in extent; at present a third of it is finished and in working order. The effluent from the tanks is distributed over the filter-bed, and is being much improved in character by this additional treatment. The works continue to be conducted in a cleanly and satisfactory manner, though the practice of disposing of the sludge from the precipitation tanks, by enclosing it in lagoons, built up of house refuse, is not altogether a satisfactory method from the point of view of public health. It has, however, the merit of economy.

COST OF GLASGOW'S SEWAGE SCHEME.—Mr. A. B. Macdonald, City Engineer, and Mr. W. C. Easton, resident engineer in connexion with Glasgow's main drainage scheme, report to the Sewage Committee that they have gone fully into the question of the amount of additional money which will be required to finish the main drainage scheme, and, after consultation with Mr. Borthwick and Mr. Melvin, are of opinion that an additional sum over that already authorised to be borrowed of 175,000*l.* will be required.

WATER-SUPPLY WORKS, LADYBANK, N.B.—The new water-supply works for Ladybank have now been completed. Hitherto water has been got by artesian wells, and this source has also been utilised for the new supply, the water being pumped up into tanks on the top of a tower, 90 ft. high, which is situated on the east side of the town. The tanks will hold 60,000 gallons, which is equivalent to two days' supply. The work has been carried out under the supervision of Messrs. Bruce & Proudfoot, C.E., Cupar, and the contracts amount to 3,800*l.*

THE NEW TERMINUS AT MILAN.—The large railway-station which is to be built at Milan is at present raising an important question which is of universal and not only of national interest. The proposed station is to be a first-class building, the façade measuring 205 metres by 100 metres in depth, and the cost amounting to many millions of francs. After ineffectually attempting to design the work in its own offices the Railroad Department opened, among Italian architects, a competition whose programme was, to say the least, remarkable. Two prizes were offered of 10,000 and 5,000 francs, and for these inadequate sums the Administration required two façades, three sections, a large perspective in water-colour, innumerable details for the completion of the design, a specification for the materials to be employed, calculations for resistance, etc. The Administration claimed the absolute and exclusive ownership of the premiated designs, with full powers to make any alterations, whether important or minor, or to abandon altogether the design placed first. It further invited architects to supply "an architectural covering" for the skeleton provided by the bureaucrats of the Administration. This insulting programme of conditions found only a small number of competitors willing to enter, and their efforts were doomed to failure. It is a matter of regret that any architect consented to form part of the jury which sat on the designs. Since all of these were condemned the Administration has decided to dispense with another competition and itself to carry out the work of this important station. Now the architects are making a stand and agitating feverishly against the want of artistic feeling displayed by the Government, as all Milan, let alone all thinking people, desire to have in the new station a building worthy of the Lombard capital. The object of the agitation is to secure another competition whose conditions shall be more respectful towards art and towards Milan. A committee has been organised for this purpose, and the matter is now under discussion.

THE ACCIDENT TO THE LOTSCHBERG TUNNEL.—The work on this tunnel has been brought to a sudden standstill by an accident as unexpected as it is serious. The recent assurance of the superintending engineer that the critical spot below the Gasterntal had been successfully passed, and that the work could now proceed without fear of interruption, has been cruelly negatived. On the night of July 23-24, the firing of the charges which had ben laid in solid rock suddenly set up a communication between the shafts and a deep stratum of moraine sand and mud saturated with water. So sudden was the catastrophe that almost all the workmen, twenty-five in number, fell victims to it, and the shaft, 2·678 kilometres long, was filled with mud and sand to a length of 1,300 metres from the north entrance. The fury with which the *débris* was driven along in the shafts indicated the power of the underground reservoir which had been struck; but the following day only was the full gravity of the situation realised, when eddies were discovered in the bed of the Kander at a spot lying 180 metres above the pierced shaft, and sinkings in the ground appeared in the Gasterntal. So far from the expected rock roof 100 metres deep, this glacier stratum extends under the shaft to an unknown depth, and the piercing of the wall of rock has set in motion the immense saturated mass 180 metres in depth lying between the sole of the tunnel and the ground above.

Miscellaneous.

"INTERNATIONAL SCAFFOLDING."—In reference to a remark at the close of the article on this subject in our issue of August 29, the "patentee of boats and cradles" referred to writes that it is incorrect to say that he had purchased M. Lièvre's patent for ladder scaffolding "and carefully stored it away out of sight." On the contrary he assures us that he had realised the possibilities of the combination of this form of scaffold with his own contrivance, and had been working them together.

FUMIGATION WITHOUT FIRE.—Fumigation of infected rooms and goods with formaldehyde has long been known to be an excellent method of disinfection, but the methods of effecting the fumigation have been inconvenient. We have received from the London office of the Bayer Company, Ltd., a sample packet containing two powders, which, when mixed together and stirred into a paste with water, emit a cloud of steam and formaldehyde vapour. The powders are sold under the name of "Autan," and although stored in one packet are kept apart by a central divisional wall. This method of fumigating or steaming rooms with a disinfecting vapour is free from the danger of fire which attends the use of burning sulphur or fumigating lamps, and we can testify to the ease of its application. We are informed that "Autan" has been approved by the French and German Governments, and has been awarded a medal by the Royal Sanitary Institute.

BRITISH CEMENT IN AMERICA.—Recent statistics show a considerable reduction in the quantity of cement imported into Chicago from all countries but the United Kingdom, the value of British cement imported having increased from 9,000*l.* in 1905 to 166,000*l.* in 1907. While it may be thought satisfactory as an indication of the confidence reposed in the quality of British cement, we fear that the large increase is due in no small measure to the reduction of price induced by general depression of the building trade in this country. On the other hand, the growing scarcity of timber in the United States is largely increasing the consumption of Portland cement for the construction of buildings, bridges, and other works. Consequently, we may reasonably infer that the demand for cement in Chicago of late may have affected local prices to such an extent as to encourage imports from this country. It remains to be seen whether the increased use of the British product will be maintained in the future.

HUMAN REMAINS IN LONDON, AND THEIR REMOVAL.—In a report drawn up by the Medical Officer of Health for the City the attention of architects, builders, and others is directed to the illegality of the removal of any human remains without a licence granted by the Home Office and under such precautions as the Home Secretary may direct, as well as to the stringent provisions of the Burial Act of 1857 in that behalf. The report gives particulars of the discovery, and the reinterment in consecrated ground at Ilford Cemetery and elsewhere, of remains in course of excavations in Fore-street, Cripplegate Without, on the site of Christ's Hospital, in Old Broad-street for the demolition of St. Peter-le-Poer Church, and on the west side of Giltspur-street adjoining the St. Sepulchre parochial schools.

W. L. THOMAS MEMORIAL.—A memorial tablet to the late Mr. W. L. Thomas, who founded the *Graphic* and *Daily Graphic* newspapers, has been set up in St. Clement Danes Church, Strand. The tablet consists of a gilded bronze portrait set in a marble frame, with figures of Art and Literature at the base, sculptured by Mr. T. Brock, R.A.

THE KESTNER AIR FILTER.—This apparatus has been introduced for the purification of air in buildings by the removal of suspended particles, or for removing disease germs before the air from hospital wards is discharged into the atmosphere. The filtration of air is now a very customary detail in ventilating practice, but it is claimed for the Kestner filter that the apparatus is free from the defects of other air-cleansing appliances, notably in the respect that the screen employed is automatically cleansed by means of a suction nozzle connected with an exhaust fan by india-rubber tubing and caused to traverse the whole area of the filter screen within a period whose duration is regulated according to the amount of dust to be removed. In cases where it is desired to destroy disease germs separated from the air the fan is connected with a receptable which can be removed and placed in a disinfector, or the fan can be arranged to discharge into a

fire or disinfecting chamber. The Kestner air filter is made with flat or circular screen, and the positions of the air ducts and auxiliaries are variable to suit special requirements.

INTERNATIONAL FIRE SERVICE COUNCIL.—At the meeting of the International Fire Service Council held last week at Luxemburg, the following Englishmen were elected to hold office:—Mr. Edwin O. Sachs (Chairman of the British Fire Prevention Committee) to be a Vice-President, Mr. Horace Folker (Vice-President of the National Fire Brigade Union) to be a member of the Executive, and Mr. Ellis Marsland (Hon. Secretary of the Society of Architects) to be a deputy Hon. Secretary. Chief Officer Meier, of the Amsterdam Fire Brigade, was elected President, and Monsieur De Marie (President of the Luxemburg Brigade Union) was elected General Hon. Secretary. The meeting was attended by delegates from nearly all the countries represented on the Council, the countries represented having an aggregate of over 2,500,000 firemen; the meeting was mainly occupied with administrative matters and the revision of the statutes, which will now allow the Council to also financially assist in the organisation of fire congresses in countries where they may be beneficial. The next Executive meeting of the Council will take place in January, and the next general Council meeting will probably be held in 1909 at St. Petersburg. The occasion of the meeting at Luxemburg was taken for a parade of 2,000 firemen from country brigades, and for exhibition fire drills, and the efficiency of the fire brigades of the Grand Duchy was most satisfactorily demonstrated.

EPSOM LOCAL AUTHORITY AND PLANS.—The Epsom Urban District Council, at its last meeting, declined to pass a motion, moved by Mr. J. Hatchard-Smith, to the effect that "so much of the powers delegated to the General Purposes Committee relating to the giving of directions on the reports of the Surveyor as extends to the approval of plans, be rescinded"; and that in future the approval of plans be subject to confirmation by the Council. Mr. Hatchard-Smith advised that business with reference to plans should come up in open Council, mentioning that there had been cases where there was a difference of opinion as to whether plans were in accordance with the by-laws. Plans were, under present procedure, approved by a majority of the General Purposes Committee. He saw no reason why the Press and the public should not know everything about plans.—It was pointed out that all the members of the Council were members of the General Purposes Committee.—The Council decided against altering the powers of the General Purposes Committee by six votes to four.

RUSSIAN CEMENT.—The British Acting-Consul at St. Petersburg, in a report which has just been issued by the Foreign Office, observes that a growing decrease is noticeable in the importation into Russia of cement of all kinds. The quantities of Portland, Roman, and other cements imported during last year amounted to 6,306 tons, while the imports in the two preceding years, according to the Russian Customs returns, were 12,693 tons in 1906, and 14,419 tons in 1905. Cement of native production is said to be of good quality, and is able to satisfy nearly all local requirements, which may, to a certain extent, says the Acting-Consul, account for the falling-off in the imports of this commodity from foreign countries.

PUBLIC WORKS IN BATTERSEA.—The Finance Committee of the Borough Council has passed estimates (subject to sanction being obtained to loans) for (1) 10,734*l.* for paving Clapham Common, north side, with hard wood; (2) 7,463*l.* for paving Queen's-road, south of Prince of Wales's-road, with hard wood; (3) 1,438*l.* for paving Queen's-road, north of Prince of Wales's-road, with old granite setts. It is proposed also to undertake the following works:—Repairing Battersea-rise with macadam, 353*l.*; reconstruction of sewer, St. John's-hill, 254*l.*; painting of coal conveyor, 139*l.*; extension of electric mains and services, 140*l.*

LOANS FOR BUILDING.—The Public Works Loan Commissioners, in their Report for the financial year 1907-8, state that they made 983 advances for sums amounting to 2,116,060*l.*, as compared with 906 advances for 2,123,496*l.* in the previous year. Of the sum 1,994,838*l.* was advanced on the security of the public rates, and 121,222*l.* on the security of property. The sum of 58,010*l.*, all of which is secured on property, was advanced under the Housing of the Working Classes Acts as follows:—Cardiff and County Conservative Working Men's Society, 1,344*l.*; Cwrt Coch Building Club, Aberbargoed, 1,980*l.*; Ealing Tenants, Ltd., 6,770*l.*; Garden City Tenants, Ltd., 15,815*l.*; Bridge-street Building Club, Blackwood, 870*l.*; Aberdare Bargoed Building Club, 3,900*l.*; Blaina Building Club, 950*l.*; Pengeulan Building Company, Ltd., 4,800*l.*; Ton-y-pandy Building Club, 2,500*l.*; Nantddu Building Company, Ltd., 1,810*l.*; Hampstead Tenants, Ltd., 8,471*l.*; Ty Fry Building Club, 1,800*l.*; and R. McAlpine & Sons, Greenock, 7,000*l.* The total amount altogether under the Housing Acts on the security of property is 1,660,602*l.*, and the balance of principal now outstanding is 451,899*l.* 16*s.* 11*d.* There were no loans sanctioned for the Housing of the Working Classes Act to municipal bodies on the security of the rates, but there are principal sums outstanding of 398,399*l.* 17*s.* 7*d.*

TOWN PLANNING BILLS IN PARLIAMENT.—The Police and Sanitary Committee of the House of Commons, to which most of the Bills promoted by municipal authorities are referred, have issued a special Report on the Bills which came before them last session. Dealing with the Bill promoted by the Liverpool Corporation, the Committee state that it was largely composed of clauses dealing with the widening of streets and town planning, for the purposes of relieving traffic, and of laying-out hitherto undeveloped land. The scope of the Bill differed from the usual form of Bill coming before the Committee, as the Corporation applied for exceptional powers owing to the difficulty of dealing with the constantly-growing dock and quay traffic, and to the fact that Liverpool is situate on one bank of a large tidal river with ocean-going traffic, and has no means of through communication. The Committee think it undesirable to encourage further local legislation on the lines of this Bill until the result of its practical working can be ascertained. The Committee further recommend that certain common terms, such as "new street," should be defined by statute, and observe with satisfaction that a Bill to amend the Public Health Acts with respect to the combined drainage of two or more houses belonging to the same owner is now before the House.

HACKNEY BOROUGH COUNCIL.—A letter has been received by the Borough Council from the London County Council declining to contribute to the cost of widening Sidney-road, Homerton. The hardwood paving in Cricketfield-road is to be relaid on a new cement concrete foundation, at a total estimated cost of 2,200*l.*

ROAD WIDENING IN DEPTFORD.—Cold Blow-lane, Deptford, is to be widened, terms having been agreed to under which a strip of land 122 ft. in length with an average width of 4 ft. is to be acquired by the Borough Council from the London Brighton and South Coast Railway Company.

Capital and Labour.

PLUMBERS' STRIKE, BOLTON.—A dispute between the master plumbers and operative plumbers at Bolton has resulted in the workers going on strike. The men, who had applied for an advance of ½d. per hour, refused a proposal of the employers for an alteration in the winter working hours in order to bring them into conformity with those of the joinery trade. Some firms not connected with the Masters' Association have granted the advance.

Patents of the Week.

APPLICATIONS PUBLISHED.*

18,215 of 1907.—T. GILLER: *Blocks for Partition Walls.*

This relates to blocks for building up into walls or partitions, produced by dry compression under very high pressure, of suitable materials into blocks with tongues and grooves; the whole process of making the blocks being carried out by machinery, such dry compression producing clean and sharply-cut blocks requiring no other accessory means of attachment one to the other than the grooves and tongues formed therein, and thus forming a rigid partition closely fitting, practically sound-proof, and capable of being painted, papered, or otherwise decorated.

26,899 of 1907.—J. J. CONNELLY: *A New System of Wall Building or Construction.*

This relates to the building or construction of walls of buildings formed by slabs or tiles and the like with splayed or rebated sides, and wedge-shaped nibs or strips on the back face, formed to receive an angle tie in iron, copper, and the like, also to form a key with the filling. To form the front of a wall one slab or tile is placed in position to form the back of the wall, another slab or tile is placed at the required thickness of the wall; these are secured together by angle ties, the space between being filled up with concrete. This process at once completes both faces of the wall. Wirework, in addition to the ties, is embedded in the concrete.

3,577 of 1908.—C. BURKER: *Stepped Joist or Bar for Use in Making Beton Ceilings.*

This relates to a stepped joist or bar for use in making beton ceilings, with hollow spaces of regulatable height, in which the steps are placed on a broad core which is uniform throughout its entire length, and which steps have inwardly-inclined rising surfaces in order to be able to place closing plates, or arched plates, according to requirements, at suitable heights between the ceiling joists.

4,261 of 1908.—NATIONAL REGULATOR COMPANY: *Apparatus for Automatically Controlling the Temperature in Buildings and other places.*

This relates to apparatus for automatically controlling temperatures through the medium of a fluid-pressure motor, comprising an elastically-mounted fluid-controlling valve, the parts being so arranged that the effective pressure of the fluid tending to move the valve, together with the action of the elastic mounting; the tension of which is directly controlled by a thermostatic element, cause a retardation (or acceleration if desired) of the opening or closing of the valve.

5,743 of 1908.—A. FRIED: *Spigot and Socket Joints for Earthenware Pipes.*

This relates to a process for the improvement of spigot and socket joints of earthenware pipes, characterised by the inner walls of the sockets and the outer walls of the spigot ends being coated before the pipes are laid with a coating of oils, fats, resin, and the like, whether the latter are in a dissolved or undissolved condition, whereby a better adhesion of the socket packing material, and also a better filling up of the sockets with the latter, is guaranteed; and characterised by the pipes, immediately after being taken out of the kilns, being coated in a still warm condition with the coating substantially on the inner walls of the socket, and on the outer walls of the spigot ends.

10,548 of 1907.—R. A. A. S. PIERCY: *Construction of Piles, Beams, and the like of Ferro-concrete.*

This relates to the metal structure or reinforcement of piles, beams, and the like of ferro-concrete, and consists in the combination with a transverse frame provided with grooves or notches for receiving the longitudinal rods or bars, of a contrivance such as a clamp or sleeve applied around the rods or bars and frame, either permanently or temporarily, to bind or secure them together for the purpose of facilitating the handling of the complete structure or reinforcement.

19,060 of 1907.—R. T. SURTEES: *Bond or Holdfast for Use in Reinforced Concrete Structures.*

This relates primarily to a holdfast or stirrup for use in holding the embedded rods of reinforced concrete in position relative to the structure, and secondly to the use of such holdfast with a form of bar whereby the holdfast and bar are incapable of altering their position relatively to each other. The holdfast consists of a rod or bar of metal of suitable cross-section in which is formed a coil or loop suitable for threading on to a reinforcing bar, and having projecting from it the two ends of the bar which form long radiating arms. The reinforcing bar is of square, diamond, triangular, polygonal, or like section, and the opening of the loop of the holdfast is of corresponding shape. To vary the position of the arms of the holdfast relatively to the bar they may be bent out of the plane of the loop, or the loop may be made of slightly larger dimensions in one direction than the other and be canted. The extremities of the arms are bent or curved, either in a direction parallel with the bar, or at an angle thereto.

19,969 of 1907.—E. W. MOIR and S. PEARSON & SON, LTD.—*Means for Breaking, Digging, or Loosening Material to be Dredged.*

This relates to a digger for breaking, digging, or loosening material such as rock, chalk, or the like, comprising a weight formed or provided with teeth, prongs, chisel edge, or the like, so arranged that upon the digger being dropped from a suitable height the teeth prongs, chisel edge, or the like will penetrate the material, and then be overbalanced by the weight so as to act upon the material after the manner of picks. The centre of gravity of the weight generally lies outside the general plane of the teeth, prongs, or the like. The diggers are so arranged in conjunction with a dredger as to be prevented from repeatedly acting on the same material when the dredging buckets are advanced forwardly and laterally.

PATENTS.—*Continued on page 289.*

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competition, —; Contracts, iv. vi. viii. x.; Public Appointment, xvii.; Auction Sales, xxvi.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competition.

OCTOBER 7.—**Inverness.**—BOAT SHELTER.—Inverness Harbour Trustees invite engineers to submit plans for the construction of a boat shelter at the Harbour at Inverness, the total cost of the scheme not to exceed 10,000*l.* Mr. Kenneth Macdonald, Clerk to the Harbour Trustees Town House, Inverness.

Contracts.

BUILDING.

SEPTEMBER 12-26.—**Netherne.**—ISOLATION HOSPITAL, ETC.—The Visiting Committee of the Surrey County Asylum at Netherne invite tenders for erection of an isolation hospital and cottages for the staff. Applications for bills of quantities, accompanied by a deposit of 2*l.*, to be made to the architect, Mr. George T. Hine, F.R.I.B.A., 35, Parliament-street, Westminster, S.W., on or before Sept. 12.

SEPTEMBER 14.—**Banbridge.**—LABOURERS' COTTAGES, ETC.—Banbridge R.D.C. invite tenders for building twenty-three single labourers' cottages and for fencing twenty-three plots. Plans, specification, and tender forms can be obtained from the Clerk to the R.D.C. on payment of 5*s.*

SEPTEMBER 14.—**Ebbw Vale.**—SCHOOL IMPROVEMENTS.—Ebbw Vale Education Committee invite tenders (by a schedule of prices) for stripping, boarding, felting, and reslating the roofs of the Victoria Schools, together with various jobbing works. Further information may be obtained on application to the architect, Mr. Henry Waters, Market-chambers, Ebbw Vale, and schedule on deposit of 1*l.* 1*s.*

SEPTEMBER 14.—**Huddersfield.**—ALTERATIONS.—The Standing Joint Committee of the West Riding C.C. invite tenders for alterations and improvements to the Huddersfield Lock-up. Plans may be seen, and bills of quantities obtained, on application at the office of Mr. J. Vickers-Edwards, County Architect, County Hall, Wakefield. A deposit of 1*l.* is required, and cheques, etc., must be made payable to and sent direct to the West Riding Treasurer, County Hall, Wakefield.

SEPTEMBER 14.—**Meriden.**—WORKHOUSE ALTERATIONS.—Meriden Board of Guardians invite tenders for alterations to the Meriden Union Workhouse. Plans, specifications, etc., may be seen at the office of the architect, Mr. Herbert W. Chattaway, Trinity-churchyard, Coventry.

SEPTEMBER 14.—**Middlewich.**—SHOP AND COTTAGE.—The Winsford Industrial Co-operative Society, *Ltd.*, invite tenders for the erection of a shop and cottage at Cledford, Middlewich. Plans and specifications may be seen at the office, 21, High-street, Winsford. Mr. Wm. Fryer, Secretary.

SEPTEMBER 14-OCTOBER 2.—**Wallingford.**—SCHOOL.—For the building of a new school for 250 scholars at Wallingford, Berks, for the Berks Education Committee. Names to the Secretary to the Education Committee, The Forbury, Reading, on or before September 14, together with a deposit of 3*l.* 3*s.*, for bills of quantities, which will be supplied by post. Plans, specification, and form of contract will be open for inspection at the Education Secretary's office between the hours of ten and five.

SEPTEMBER 14-OCTOBER 2.—**Waltham St. Lawrence.**—SCHOOL.—For building a new school for 300 scholars at Waltham St. Lawrence, Berks, for the Berkshire Education Committee. Names to the Secretary to the Education Committee, The Forbury, Reading, on or before September 14, and at whose office plans, etc., can be inspected, together with a deposit of 3*l.* 3*s.*, for bills of quantities.

SEPTEMBER 15.—**Dunshaughlin.**—LABOURERS' HOUSES.—Dunshaughlin R.D.C. invite tenders for building fifty-six houses under the Labourers' (Ireland) Acts. Plans and specifications and tender forms can be obtained from Mr. F. Morris, Clerk of Council.

SEPTEMBER 15.—**Harlington and Toddington.**—FARM BUILDINGS.—Tenders are invited for erection of farm buildings and drainage at Woodfields Farm, Harlington, and Cowbridge Farm, Toddington. Plans, etc., can be seen at office of Mr. E. T. Tutt, F.S.I., chartered surveyor, Market-place, Ampthill.

SEPTEMBER 15.—**Lochgelly.**—LAUNDRY.—Estimates are required for the brick, joiner, plaster, and steel roofing works of laundry buildings to be erected at Cartmore-road, Lochgelly. Plans and specifications may be seen in the hands of Mr. James T. Scobie, architect, Dunfermline and Lochgelly.

SEPTEMBER 15.—**Rafford.**—REPAIRS.—Estimates are wanted for the mason, carpenter, slater, plumber, plaster and painter works of repairs to be executed at the United Free Church Manse of Rafford. Plans and specifications may be seen with Mr. Charles C. Doig, architect, 75, High-street, Forres.

SEPTEMBER 15.—**Thurlstone.**—COUNCIL OFFICES.—Tenders are invited, in whole or separate trades, for the erection and completion of new Council Offices, etc., at Thurlstone for the Thurlstone U.D.C. Plans may be seen, and specification and quantities obtained, on application to Mr. Ernest W. Dyson, architect, 10, Regent-street, Barnsley.

SEPTEMBER 15.—**Torryburn.**—BUSINESS PREMISES, ETC.—Estimates are wanted for the several works required in the erection of business and dwelling-house premises, Newmills, Torryburn, for Mr. W. E. Paterson. Plans and specifications may be seen, and all further information obtained, on application to Mr. Scobie, architect, Douglas-street, Dunfermline.

SEPTEMBER 16.—**Portsmouth.**—RECONSTRUCTING AND COMPLETING ROOFS.—Tenders are invited for reconstructing, completing, and maintaining in repair for six calendar months of the roofs to the four vestries at the Mortuary Chapels at the Portsea Parish Cemetery, St. Mary's-road, in the Borough of Portsmouth. The specification may be seen, and a form of tender obtained, at the Borough Engineer's office at the Town Hall.

SEPTEMBER 17.—**Borthygest.**—HOUSES.—Tenders are invited for the erection of two houses at Borthygest, Portmadoc, for Mr. Richard Williams, 13, Glyn-terrace, Borthygest. Plans and specification can be inspected at the offices of Messrs. Owen M. Roberts & Son, M.S.A., architects and surveyors, Portmadoc.

SEPTEMBER 17.—**Linthwaite.**—HOUSE AND SHOP.—Tenders are invited for the various works required in the erection of house and shop, Causeway-side, Hoylehouse, Linthwaite. Plans may be seen, and quantities obtained, at offices of Messrs. Lunn & Kaye, architects and surveyors, Milnsbridge and Huddersfield.

SEPTEMBER 17.—**Treharris.**—ADDITIONS.—Tenders are invited for building additions to shop and altering stables at 35, Fox-street, Treharris, for Mr. D. E. Jones, Silbrook House, Whitchurch. Plans, etc., may be seen either at 35, Fox-street, Treharris, or at office of Mr. T. Roderick, architect, Clifton-street, Aberdare.

SEPTEMBER 18.—**Pentre.**—SCHOOL ADDITIONS.—Rhondda U.D.C. invite tenders for enlarging the boys' department of the Pentre Council School. Plans, etc., may be seen, and bills of quantities and tender form obtained at the office of the architect, Mr. Jacob Rees, Hillside Cottage, Pentre, upon production of a receipt from the Accountant of the Council for the required deposit of 1*l.* 1*s.*

SEPTEMBER 19.—**Bailiffe Bridge.**—OFFICE EXTENSIONS.—Tenders are invited for the masons' and bricklayer's, plumber's and glazier's, rolled steel, plasterer's, slater's, and concretor's work required in the extensions to offices at Clifton Mills, Bailiffe Bridge. Plans and specifications may be seen, and bills of quantities obtained, at offices of Messrs. Joseph F. Walsh & Graham Nicholas, F.R.I.B.A., architects, Museum-chambers, Halifax.

SEPTEMBER 19.—**Buttershaw.**—SCHOOL.—Bradford Education Committee invite tenders for the various trades required in the erection of a new Council school at Buttershaw. Drawings, etc., may be seen, and bills of quantities and forms of tender obtained, on and after the 14th inst. by applying to Mr. F. E. P. Edwards, F.R.I.B.A., City Architect, Whitaker-buildings, Bradford.

SEPTEMBER 19.—**Canterbury.**—CRICKET PAVILION IMPROVEMENTS.—Kent County Cricket Club invite tenders for alterations and additions to the pavilion at the St. Lawrence Cricket Ground, Canterbury. Copies of the quantities to be obtained on depositing 5*l.* with the architects Messrs. Jennings & Gray, 4, St. Margaret's-street, Canterbury, at whose office the plans and specification may be seen.

SEPTEMBER 19.—**Cardiff.**—ALTERATIONS.—Tenders are invited for the conversion into shop premises of 44 and 46, Crwys-road, Cardiff, for Mr. R. W. Nicholas. Plans and specification may be seen at office of Mr. W. H. Dashwood Caple, F.R.I.B.A., architect, 2 Church-street, Cardiff, and a copy of the quantities obtained on deposit of 1*l.* 1*s.*

SEPTEMBER 19.—**Monmouth.**—SCHOOL REPAIRS.—Monmouthshire Education Committee invite tenders for carrying out alterations and repairs to the following Council Schools:—Park-terrace, Pontypool; Varteg Infants'; New Inn, near Pontypool; Earl-street, Tredegar; Rumney, near Cardiff. Plans and specifications can be seen at the offices of Mr. John Bain, architect, High-street, Newport.

* SEPTEMBER 19.—**Near Lichfield.**—NEW OFFICES, ETC.—The Staffordshire Education Committee invite tenders for erection of new offices, cloak-room, and alterations to the Hammerwich School. See advertisement in this issue for further particulars.

* SEPTEMBER 21.—**Corfe Mullen.**—PUMPING STATION.—The B.C. of Poole invite tenders for pumping station, buildings, tanks, cottages, etc., at Corfe Mullen near Wimborne. See advertisement in this issue for further particulars.

SEPTEMBER 21.—**Dundalk.**—OFFICE, ETC.—Directors of Great Northern Railway Company (Ireland) invite tenders for a new office to be built on the Dundalk Station platform, and for the conversion of an old stores building at Dundalk into a fitting shop. Drawings, etc., can be seen at the office of Mr. W. H. Mills, Engineer-in-Chief, Amiens-street Terminus, Dublin, or copies at the office of the district Engineer, Belfast, and at the said offices can be obtained forms of tender on payment of 1*s.* each (not returnable).

SEPTEMBER 21.—**Millmead.**—BUILDINGS AT GAS-WORKS.—Guildford T.C. invite tenders for the erection of certain buildings over the gas producer plant and machinery at the Waterworks, Millmead. Plans may be seen, and copies, specification, and form of tender obtained, on application to Mr. C. G. Mason, A.M.Inst.C.E., the Borough Engineer and Surveyor, at his office in Tunsgate, Guildford.

SEPTEMBER 21.—**Roscrea.**—POST-OFFICE ADDITIONS.—Board of Public Works invites tenders for alterations and additions to the Crown Post-office at Roscrea, Co. Tipperary. Plans and specification can be seen at the Post-office, Roscrea, and at office of Mr. H. Williams, Secretary, office of Public Works, Dublin, where forms of tender may be obtained.

* SEPTEMBER 21.—**West Ealing.**—NEW SCHOOL.—The Ealing Education Committee invite tenders for new school, Cranmer-avenue, West Ealing. See advertisement in this issue for further particulars.

SEPTEMBER 22.—**Halifax.**—RECONSTRUCTION.—Tenders are invited for the several works required to be executed in connexion with the reconstruction of the hosiery, tailoring, and millinery departments at the Central Stores, Northgate, Halifax, for the Halifax Industrial Society, *Ltd.* Drawings and specifications will lie for inspection, and bills of quantities obtained, at offices of Mr. W. Clement Williams, architect, 29, Southgate, Halifax, from September 15.

SEPTEMBER 22.—**Pickering.**—OFFICES.—Standing Joint Committee of the North Riding of Yorkshire C.C. invite tenders for the erection of a weights and measures office at Pickering. Plans and specifications for the work may be seen, and further information obtained, at the offices of the County Architect, Mr. Walter H. Brierley, F.S.A., 13, Lendal, York, on and after Wednesday, September 16. Quantities will be supplied to contractors prepared to tender for the whole of the work upon application in writing addressed to the County Architect before September 14.

SEPTEMBER 22.—**South Shields.**—ALTERATIONS.—The Corporation invite tenders for the alterations required at the Laygate Divisional Police-station, corner of Laygate-lane and Brunswick-street. Drawings may be seen, and bills of quantities obtained, from Mr. S. E. Burgess, M.Inst.C.E., Borough Engineer and Surveyor, Chapter-row.

SEPTEMBER 23.—**Beverley.**—RAILWAY STATION.—The Directors of the North-Eastern Railway invite tenders for all trades, with the exception of ironwork, in connexion with the renewal of platform roofing at Beverley Station. Plans and specification may be seen, and quantities and further information obtained, upon application to Mr. William Bell, the Company's Architect, at York. Duplicate plans may also be seen at Beverley Stationmaster's office. Quantities supplied on personal application to parties tendering for the whole of the works.

SEPTEMBER 23.—**Chiswick.**—UNDERGROUND CONVENIENCE.—U.D.C. of Chiswick invite tenders for the construction of underground convenience in the Chiswick High-road. Forms of tender may be obtained by application to Mr. E. Willis, A.M.Inst.C.E., Surveyor Town Hall, Chiswick, where plans, etc., may be inspected between 9 a.m. and 1 p.m.

SEPTEMBER 23-OCTOBER 17.—**Cwmfelinfach.**—SCHOOL.—Proposed new Council school at Cwmfelinfach, near Ynysddu, Mon., to accommodate 400 children, for Monmouthshire Education Committee. Names to Mr. R. L. Roberts, architect, Abercarn, on or before Wednesday, the 23rd inst., together with a deposit of 3*l.* 3*s.* for bills of quantities. Plans and specification may be seen at the offices of Mr. C. Dauncey, Secretary, C.C. Offices, Newport, Mon.

SEPTEMBER 23.—**Walker Gate.**—STATION BUILDINGS.—The Directors of the North-Eastern Railway invite tenders for the erection of station buildings at Walker Gate. Plans and specification may be seen, and quantities and further information obtained, upon application to Mr. William Bell, the Company's Architect, Central Station, Newcastle-on-Tyne. Quantities supplied on personal application to parties tendering for the whole of the works.

SEPTEMBER 23.—**York.**—ALTERATIONS TO PUMPING STATION.—The Directors of the North-Eastern Railway invite tenders for alterations to pumping station at York. Plans and specification may be seen, and quantities, and further information obtained, upon application to Mr. William Bell, the Company's architect, at York. Quantities supplied on personal application to parties tendering for the whole of the works.

SEPTEMBER 24.—**Ardsley.**—SCHOOL.—The Education Committee of the West Riding C.C. invite whole or separate tenders for the erection of a new school at Ardsley near Barnsley. Plans may be seen, and quantities obtained, on application to the architect, Mr. A. B. Linford, of Wombwell, near Barnsley.

on deposit of 1l., which must be paid to the West Riding Treasurer, and sent to him direct at the County Hall, Wakefield.

✱ SEPTEMBER 25.—**Dudley.**—ENLARGE POST-OFFICE.—The Commissioners of H.M. Works, etc., invite tenders for the enlargement of the P.O., Dudley. See advertisement in this issue for further particulars.

✱ SEPTEMBER 28.—**New Malden.**—NEW STOKEHOLE, ETC.—The Kingston Guardians invite tenders for making internal alterations to ironwork shed and building new stokehole, etc. See advertisement in this issue for further particulars.

✱ SEPTEMBER 29.—**Bromley.**—SCHOOL.—The Kent Education Committee invite tenders for new secondary school for girls at Bromley. See advertisement in this issue for further particulars.

✱ SEPTEMBER 30.—**Camberwell.**—COTTAGES.—The Camberwell B.C. invite tenders for erection of seven working-class cottages. See advertisement in this issue for further particulars.

OCTOBER 5.—**Sevenoaks.**—CHAPEL.—Sevenoaks U.D.C. invite tenders for the erection of a Chapel at the new cemetery, Greatness Park, Sevenoaks. Plans, specification, etc., may be inspected, forms of tender, and further information obtained, at the offices of Mr. S. Towlson, A.M.Inst.C.E., Surveyor to the Council, upon payment of a cash deposit of 5l.

NO DATE.—**Bristol.**—REBUILDING.—Tenders are invited for rebuilding at 75 to 79, Victoria-street. Plans and specifications may be seen, and quantities obtained, at offices of Messrs. La Trobe & Weston, F.R.I.B.A., architects, 44, Corn-street, on payment of a deposit of 1l. 1s.

NO DATE.—**Woodlesford.**—SCHOOL ALTERATIONS.—Tenders are required for the various trades in the alterations at the Woodlesford Provided School. Specification and bills of quantities on application to Mr. Robert J. Smith, Education Offices, Garforth, near Leeds.

ENGINEERING, IRON, AND STEEL.

SEPTEMBER 14.—**Darlington.**—HEATING BOILER.—Darlington Corporation invite tenders for supplying and fixing a hot-water heating boiler, in connexion with the greenhouses at the South Park. Specification may be seen, and forms of tender obtained, on application at the offices of Mr. George Winter, Borough Surveyor, Town Hall.

SEPTEMBER 14.—**Hindley.**—PIPES.—Hindley U.D.C. invite tenders for 1,000 yds. 6-in. open socket and spigot cast-iron pipes; also 1,000 yds. open socket and spigot steel pipes. Specification and forms of tender may be obtained from Mr. H. O. Timmins, Gas Engineer, Council Offices, Hindley.

SEPTEMBER 14.—**Royton.**—ENGINEERING WORK AT BATHS.—The U.D.C. of Royton invite tenders for the engineering work for the new Public Baths, Park-street, Royton. Specifications and other particulars can be obtained on application to Mr. Ernest Woodhouse, F.R.I.B.A., 88, Moseley-street, Manchester, on payment of a fee of 2l. 2s.

SEPTEMBER 15.—**Rawmarsh.**—RAILINGS.—Rawmarsh U.D.C. invite tenders for the supplying, delivering, fixing, and painting of about 236 lin. yds. of wrought-iron vertical bar unclimbable railings; also one pair of gates, at Victoria Park, Rawmarsh. Copy specification can be seen on application to Mr. J. W. Bellamy, Clerk to the Council, Council Offices, Rawmarsh.

SEPTEMBER 16.—**Manchester.**—HEATING APPARATUS.—Manchester Education Committee invite tenders for providing and fixing a low-pressure heating apparatus at the Grange-street Municipal School, Grange-street, Bradford, Manchester. Plans may be seen, and a copy of bills of quantities (including specification) obtained at the Education Offices, Deansgate, Manchester, on a deposit of 1l. 1s. Cheques to be made payable to the Accountant, Education Offices, Deansgate, Manchester.

SEPTEMBER 18.—**Hull.**—SURFACE-CONDENSING PLANT.—The Corporation invite tenders for the supply and fixing at the Power Station, Osborne-street, of a surface-condensing plant, with motor-driven pumps, capable of dealing with 28,000 lb. of steam per hour. Forms of tender and other particulars may be obtained from the City Engineer on payment of 1l. Remittances should be made payable to Mr. T. G. Milner, City Treasurer.

SEPTEMBER 18.—**London.**—RAILWAY STORES.—The Directors of the Mersey Railway Company invite tenders for the supply of:—(1) Asbestos packings, indiarubber, and gutta percha; (2) boiler suits; (3) bolts, nuts, screws, nails, etc.; (4) brake gear; (5) brushes; (6) car fittings; (7) carriage of ashes, rubbish, etc.; (8) cement, bricks, etc.; (9) chandlery; (10) chemicals, etc.; (11) collector shoes and brackets and brake blocks, etc.; (12) cotton waste, etc.; (13) electrical sundries; (14) fog signals; (15) gauge glasses; (16) glass; (17) incandescent lamps and fittings; (18) ironmongery, tools, etc.; (19) lead, sheet piping, etc.; (20) leather, etc.; (21) metals; (22) oils, greases, etc.; (23) paints, varnish, etc.; (24) signal gear; (25) signal wire; (26) wooden shafts, etc.; (27) wrought-iron piping and fittings for gas, steam, etc. Those desirous of tendering should apply to Mr. Geo. H. Langham, Secretary, Worcester House Walbrook, London, E.C., for a form or forms under the above numbers.

SEPTEMBER 19.—**Poole.**—CAST-IRON PIPES.—The Corporation invite tenders for the supply of cast-iron pipes for twelve months. Specifications and forms of tender may be obtained at the office of the Waterworks Manager, Municipal Buildings, Poole.

SEPTEMBER 22.—**Bedford.**—IRON STAIRCASE.—The Guardians invite tenders for an iron staircase in accordance with plan and specification, which may be inspected at office of Mr. William Payne, Clerk to the Guardians, Union Offices, 115, High-street, Bedford.

SEPTEMBER 23.—**Darlington.**—IRON AND STEEL WORK.—The Directors of North-Eastern Railway invite tenders for iron and steel work in the erection of boiler and tender shop, paint shop, mess-rooms, etc., at Darlington. Plans and specifications may be seen, and quantities and further information obtained, upon application to Mr. William Bell, the Company's Architect, at York. Quantities supplied on personal application to parties tendering for the whole of the works.

✱ OCTOBER 7.—**Victoria Park.**—SUSPENSION BRIDGE.—The London C.C. invite tenders for a steel-wire rope suspension bridge at Victoria Park. See advertisement in this issue for further particulars.

MISCELLANEOUS.

SEPTEMBER 14.—**Chesterfield.**—SCAVENGING.—Chesterfield R.D.C. invite tenders for the term of three years for cleansing the ashpits, privies, and dustholes in the districts of Barlow, Holmesfield, Coal Aston. Forms of tender can be obtained from Mr. J. Hutchinson, Sanitary Inspector, Staveley, from whom any further information may be obtained.

SEPTEMBER 14.—**Westhampnett.**—CARTAGE.—The R.D.C. of Westhampnett invite tenders for cartage of flints, gravel, etc. Full particulars may be obtained of the Council's Surveyors, Mr. J. J. Budden, of 4, St. Pancras, Chichester, and Mr. J. H. Hobgen, of 43, Lyndhurst-road, Chichester.

SEPTEMBER 15.—**Shepley.**—PLUMBERS' WORK.—West Riding Education Committee (Division 12) invite tenders for plumbers' work required in converting the existing closets at Shepley Provided School into latrines. Specification may be had from Mr T. R. Bryan, Divisional Clerk, Education Offices, Penistone.

SEPTEMBER 17.—**Cuckfield.**—MATERIALS, ETC.—Cuckfield Guardians invite tenders for bricklayers', carpenters', plumbers', painters', and ironmongers' materials and work, as per scheduled prices. Mr. Edward J. Waugh, Clerk, Haywards Heath.

SEPTEMBER 18.—**Glasnevin.**—RAILINGS, ETC.—The Dublin Cemeteries Committee invite tenders for the erection of gates, gate piers, and boundary railings at land opposite entrance to Prospect Cemetery, Glasnevin, according to plans and specifications of Mr. George P. Sheridan, F.R.I.A.I., and which can be seen at his office, 25, Suffolk-street, Dublin.

SEPTEMBER 22.—**Ackworth and Stanley Ferry.**—SCHOOL FURNITURE.—West Riding C.C. (Education Department) invite tenders for furniture required for the Ackworth new Provided School and Stanley Ferry new Provided School. Full particulars may be obtained from the Education Department (Elementary Branch), County Hall, Wakefield.

SEPTEMBER 23.—**Loch Bradan.**—WATER SUPPLY PIPES.—Troon T.C. invite tenders for supplying cast-iron pipes (Contract No. 1), fire-clay pipes and ferro-concrete pipes (Contract No. 2), in connexion with the providing of a supply of water from Loch Bradan. Copies of the specifications, schedules of quantities, and form of tender for each contract may be obtained from the engineers, Messrs. J. & H. V. Eaglesham, 24, Wellington-square, Ayr, on payment of 2l. 2s.

✱ OCTOBER 1.—**Kensington.**—FLOORING, PLASTERING, ETC.—The Kensington Board of Guardians invite tenders for providing and laying pitch pine floor, plastering walls, and sundry decorative works at Infirmary. See advertisement in this issue for further particulars.

✱ NO DATE.—**London.**—PULLING DOWN.—Tenders are invited for pulling down and clearing premises, Gutter-lane, E.C. See advertisement in this issue for further particulars.

NO DATE.—**Southbourne.**—REMOVAL OF PIER.—Tenders are invited for the removal of the structure of the Southbourne Pier. For full particulars apply to Mr. W. H. Helliet, auctioneer, Boscombe, Bournemouth.

PAINTING, etc.

SEPTEMBER 14.—**Glasgow.**—PAINTER AND GASFITTER WORK.—Glasgow Corporation invite tenders for (1) the painter work, and (2) the gasfitter work, to be done in the Fruit, etc., Market, South Albion-street. Copies of the specification and forms of latrines. Specification may be had from Mr. T. R. M'Donald, City Engineer, 64, Cochrane-street.

SEPTEMBER 15.—**St. Helens (I.W.).**—PAINTING.—St. Helens U.D.C. invite tenders for painting lamp columns and lanterns in the St. John's, Oakfield, and High-park Districts. Specifications can be seen at the Council Offices, High-park, Ryde.

SEPTEMBER 16.—**Roose.**—PAINTING.—Tenders are invited for painting the external wood and ironwork of the Workhouse Buildings at Roose. Specification may be had on application to Mr. Frank Taylor, Clerk to the Guardians, Barrow-in-Furness.

SEPTEMBER 18.—**Eastbourne.**—PAINTING.—The Committee of Management, Princess Alice Memorial Hospital, Eastbourne, invite tenders for painting the outside wood and iron work at the Hospital. Messrs. J. H. Campion Coles & H. H. Coles, Hon. Secs., Carew-road.

SEPTEMBER 19.—**Southampton.**—PAINTING, ETC.—The Corporation invite tenders for executing certain painting, distempering, and other works at the Cemetery. Specification and conditions may be inspected, and forms of tender obtained, at the Borough Engineer's Office, 123, High-street.

✱ SEPTEMBER 21.—**Homerton.**—PAINTING.—The Guardians of the Hackney Union invite tenders for external painting, etc., to cottages, 35 to 68 (inclusive), Crozier-terrace, High-street, Homerton, N.E. See advertisement in this issue for further particulars.

SEPTEMBER 22.—**Halifax.**—PAINTING.—The Markets Committee of the Halifax Corporation invite tenders for painting the interior of three houses in Victoria-road. Plans and specifications may be seen, and forms of tender obtained, on application to Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax.

SEPTEMBER 23.—**Terenure and Rathfarnham.**—PAINTING.—South Dublin R.D.C. invite tenders for painting 116 gas lanterns and pillars in Terenure and Rathfarnham, according to specification, which may be seen at the Council's Office, 1, James's-street, Dublin.

SEPTEMBER 25.—**Mickleover.**—PAINTING.—The Committee of the Derby County Asylum, Mickleover, invite tenders for painting three wards and part of the outside buildings. Specifications may be obtained from Mr. A. McWilliams, Resident Engineer.

NO DATE.—**Great Horton.**—PAINTING, ETC.—Tenders wanted for painting, decorating, etc., the Wesley-place Chapel, Great Horton. Specifications to be had of Mr. H. C. Colledge, 30, Ewart-place, Great Horton.

NO DATE.—**Uxbridge.**—REPAIRS.—The Managers of the Uxbridge St. Margaret's School require certain repairs carried out at the two cottages, 18 and 19, the Lynch, Uxbridge. Copy of the specification can be seen at the office of Mr. A. Ambrose Bane, 61A, High-street, Uxbridge.

ROADS, SANITARY, AND WATER WORKS.

SEPTEMBER 14.—**Ebbw Vale.**—ASPHALTING.—Ebbw Vale Education Committee invite tenders for asphalting the Cwmyrddelerch Council School playgrounds. Specification and further particulars may be obtained upon application to the architect, Mr. Henry Waters, Market-chambers, Ebbw Vale.

SEPTEMBER 14.—**Leeds.**—PAVING AND FLAGGING.—The Leeds Highways Committee invite tenders for the paving and flagging of the following streets:—Darfield-road (part), Darfield-avenue, Conway-place (part), Sandhurst-place (part), Hawkins-place (part), Duxbury-street (part), Highbury-lane, Hope-place, Ingram-road (part), Tilbury-place. Drawings may be seen at the City Engineer's office, Municipal Buildings. Forms of tender and bills of quantities may be obtained, and copies of the documents forming the contract inspected, on application at the Highways Office, 155, Kirkstall-road.

SEPTEMBER 15.—**Aldershot.**—PRIVATE STREET WORKS.—Aldershot U.D.C. invite tenders for the making-up of Alfred-road, High-street. Plans and specifications may be seen, and full particulars obtained, on application at the Surveyor's Offices, Municipal Buildings, Aldershot.

SEPTEMBER 15.—**Devizes.**—SEWER.—Devizes R.D.C. invite tenders for the laying in of a sewer with manholes, etc., in the Forty Acres, Roundway. Plans and specifications can be seen on applying to Mr. J. M. Butcher, Southbroom-terrace, Devizes.

SEPTEMBER 16.—**Bilston.**—SEWERAGE.—The U.D.C. of Bilston invite tenders for sewering the private street leading from Salop-street to the east end of King-street. Plan and specification may be seen, and bill of quantities and form of tender obtained, on application to Mr. J. P. Wakeford, A.M.Inst.C.E., Engineer and Surveyor, Town Hall, Bilston.

SEPTEMBER 16.—**Herne Bay.**—SEWERING.—Herne Bay U.D.C. invite tenders for the sewering of Reculver-road, Bird's-lane, Margate-road, and also for the sewering under the Private Street Works Act, 1892, of Grange-road. Plans, sections, and specifications can be seen, and forms of tender obtained, from Mr. F. W. J. Palmer, Surveyor to the Council, Town Hall.

SEPTEMBER 17.—**Pinner.**—SEWAGE WORKS.—The R.D.C. of Hendon invite tenders for the construction of 5,677 yds. of 15-in., 12-in., and 9-in pipe sewer, together with manholes, etc.; also for sewage purification works, consisting of the construction of tanks, bacteria beds, filters, etc., in the Parish of Pinner. Plans, sections, and specifications may be seen at the office of Mr. J. A. Webb, Engineer to the Council, Stanmore, where schedule of quantities and forms of tender can be obtained on deposit of 2l. 2s.

SEPTEMBER 18.—**Glenmore.**—WATER SUPPLY.—Messrs. J. N. Richardson, Sons, & Owden, Ltd., invite tenders for the improvement of their water supply to Glenmore Bleach Works. Plans, etc., may be seen, and specification, etc., obtained, upon payment of 1l. 1s., at the office of the engineers, Messrs. Swiney & Croasdaile, MM.Inst.C.E., Avenue-chambers, Belfast.

SEPTEMBER 19.—**Felixstowe.**—GRANITE AND STEAM ROLLING.—Felixstowe and Walton U.D.C. invite tenders for the supply of Guernsey granite, and also for steam road rolling. Specifications and forms of tender may be obtained on application to Mr. H. Clegg, A.M.Inst.C.E., Surveyor to the Council, Town Hall, Felixstowe.

SEPTEMBER 19.—**Frimley.**—SEWERS.—Frimley U.D.C. invite tenders for connecting existing house drains to the new sewers. The plan may be seen, and form of tender, etc., obtained, during office hours, at the office of Mr. T. Clement Jones, C.E., Engineer and Surveyor to the Council, Municipal Buildings, Camberley, upon payment of a deposit of 5l.

SEPTEMBER 19.—**Wycombe.**—ROAD WORKS.—Wycombe R.D.C. invite tenders for levelling, metalling, channelling, and making good Perry-street, Wendover, Bucks. Plans, sections, and specifications can be seen on payment of 1l. 1s. on application to the Surveyor, Mr. Arthur L. Grant, 41, High-street, High Wycombe.

SEPTEMBER 21.—**Shinfield and Swallowfield.**—WATER MAINS.—Wokingham R.D.C. invite tenders for the supply and laying of about 849 lin. yds. of 4-in. cast-iron water main, and about 250 yds. of 3-in. ditto, including the supply and fixing in position of sluice valves, hydrants, etc., in Parishes of Shinfield and Swallowfield. Plans may be seen, and specification, etc., obtained, at office of Mr. John F. Sergeant, Clerk, Council Offices, Wokingham, on payment of 1l.

SEPTEMBER 22.—**Reading.**—PIPE SEWERS.—The Corporation invite tenders for the laying of pipe sewers, with concrete foundation and manholes, in Shinfield-road, Reading. Drawings may be seen, and a copy of the general conditions, etc., obtained, on application at offices of Mr. John Bowen, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Reading. Before such application 1*l.* 1*s.* must be deposited with the Borough Accountant of Reading.

SEPTEMBER 22. — **Wembley.** — ROAD WORKS. — Wembley U.D.C. invite tenders for the making-up of the second portion of Eagle-road. Drawings and specification may be seen at the office of Mr. Cecil R. W. Chapman, the Surveyor to the Council, at the Public Offices, Wembley; and a copy of the quantities, with form of tender attached, may be obtained upon payment of a deposit of 3*l.* 3*s.*, from Mr. Fredk. W. Rodd, Clerk to the Council, Public Offices, Wembley.

SEPTEMBER 24. — **Strensall.** — SEWAGE WORKS. — Flaxton R.D.C. invite tenders for work and materials required in the construction of sewers, lifting machinery, and sewage disposal works for the Parish of Strensall. Drawings may be seen, and copies of specifications, etc., obtained, at the offices of the engineer, Mr. Frederick J. Comyn, 1, Victoria-street, Westminster, or at office of Mr. Joseph Peters, Clerk to the Council, 4, New-street, York, between 10 a.m. and 4 p.m., upon payment of 1*l.* 1*s.*

SEPTEMBER 25. — **Upper Norwood.** — STONEWARE PIPE SEWER.—Penge U.D.C. invite tenders for the laying of about 400 ft. of 12-in. glazed stoneware pipe sewer at Fox-hill, Upper Norwood. Quantities and forms of tender can be obtained on payment of 1*l.* on application to Mr. H. W. Longdin, the Surveyor to the Council, at the Town Hall, Anerley-road, Anerley.

SEPTEMBER 26. — **Letchworth.** — ROADS.—Hitchin R.D.C. invite tenders for the construction of about 1,000 yds. of metalled roads in the Parish of Letchworth. Plans and specifications may be seen at the Council's Offices, Old Town Hall, Hitchin.

SEPTEMBER 28.—**Cambridge.**—SEWERS.—Chesterton Union invite tenders for the construction of sewers at the Union Workhouse. Plans and specifications can be seen at the office of Mr. W. Wren, Castle-street, Cambridge.

SEPTEMBER 28.—**Porthcawl.**—ROAD.—The U.D.C. of Porthcawl invite tenders for the construction of a new road, 200 yds. in length, being the extension of Newton-road towards the beach. Plans and specification can be seen, and forms of tender obtained, at the Council Offices, Porthcawl. Mr. Arthur S. Lilley, C.E., Surveyor to the Council.

SEPTEMBER 29. — **Rhyl.** — WATER TOWER. — Rhyl U.D.C. invite designs and tenders for the erection of a water tower near Rhyl. Particulars can be obtained from Mr. Leonard G. Hall, A.M.Inst.C.E., Water Engineer's Office, Paradise-street, Rhyl.

OCTOBER 12.—**Dunmurry.**—SEWERAGE WORKS.—Lisburn R.D.C. invite tenders for the various works required in connexion with the Dunmurry Sewerage Works. Drawings, etc., may be seen and bill of quantities, with form of tender, obtained (on payment of 3*l.* 3*s.*), from the Engineer, Mr. James Hunter, B.E., Antrim-road, Lisburn; or Mr. Samuel C. Hunter, Quantity Surveyor, Scottish Provident-buildings, Belfast; or from the Clerk to the Council, Mr. William Sinclair, Council Offices, Workhouse, Lisburn.

✱ OCTOBER 13. — **Deptford and Greenwich.** — SEWER.—The London C.C. invite tenders for 1,026 ft. of cast-iron sewer at Deptford and Greenwich. See advertisement in this issue for further particulars.

NO DATE.—**Bradford Moor.**—DRAINAGE.—Tenders are wanted for draining twenty houses. Messrs. Marshall Bros., Bradford Moor.

STONE, MATERIALS, AND STORES.

SEPTEMBER 14.—**Knutsford.**—UNBROKEN GRANITE.—Bucklow Guardians invite tenders for the supply of Welsh Penmaenmawr unbroken granite for breaking purposes. Forms of tender may be obtained from Mr. George Leigh, Clerk, Union Offices, Knutsford.

SEPTEMBER 15.—**Biggleswade.**—GRANITE.—Biggleswade Guardians invite tenders for the supply of granite. Forms of tender, with full particulars, can be obtained on application to Mr. G. Wagg, Clerk to the Guardians, Biggleswade.

SEPTEMBER 15. — **Plymouth.** — STORES. — The Guardians invite tenders for the following supplies: Ironmongery, plumbing materials, plumbers' work, oils and colours, etc. Forms of tender may be had on application at the offices of Mr. W. Adams, Clerk to the Guardians, 13, Princess-square, Plymouth. Further particulars can be obtained at the Workhouse or (Central) Scattered Home.

SEPTEMBER 15.—**Rochester.**—STORES.—The Corporation invite tenders for the supply of tools, Portland cement, curb and paving material, etc. Specifications and forms of tender can be obtained on application to Mr. William Banks, A.M.Inst.C.E., City Surveyor, Guildhall, Rochester.

✱ SEPTEMBER 17.—**West Norwood.**—PURPOSE-MADE COPINGS.—The Lambeth B.C. invite tenders for supply of about 755 lin. ft. of Staffordshire blue purpose-made copings. See advertisement in this issue for further particulars.

SEPTEMBER 17.—**Wrexham.**—STORES.—Wrexham Guardians invite tenders from ironmongers, timber merchants, builders, etc., for materials. Forms of tender, containing all information, may be had upon application to Mr. T. J. Thomas, Workhouse, Wrexham, between the hours of 10 and 12 a.m. and 2 and 5 p.m.

SEPTEMBER 18.—**Camberwell.**—SUPPLIES.—Camberwell Guardians invite tenders for supplies, which include turnery, ironmongery, timber, building materials, etc. Forms can be had upon application to Mr. Charles S. Stevens, Clerk to the Guardians, Guardians' Offices, 29, Peckham-road, S.E.

SEPTEMBER 24. — **Grays.** — GRANITE, ETC.—Grays Thurrock U.D.C. invite tenders for the supply and delivery to the Town Wharf, Grays, of about 500 tons of 1½-in. granite or basalt macadam, and 100 tons of ½-in. chippings of the same material. Specification and forms from the Council's Surveyor, at his office, High-street, Grays.

SEPTEMBER 24. — **Romford.** — GRANITE.—Romford U.D.C. invite tenders for the supply of about 2,250 tons of best blue Guernsey granite, broken as to part to 1½-in. and as to other part to 2-in. cube. Forms of tender can be obtained on application to either Mr. J. Turvey, the Surveyor, or Mr. Charles T. King, Clerk, at the Council Offices, Romford.

SEPTEMBER 24.—**Whittingham.**—SUPPLIES.—Tenders are invited for the supply of iron, ironmongery, brass, glass, timber, slates, gas retorts, fire bricks, cement, etc., to the County Asylum, Whittingham, near Preston. Forms of tender, with particulars of quantities, may be obtained from Mr. Thomas Dilworth, Clerk and Steward.

SEPTEMBER 26.—**South Shields.**—MATERIALS.—The Corporation invite tenders for the supply of materials, including Northumberland whinstone, Fifeshire whinstone, slag, limestone, Caithness flags, Portland cement, paints, timber, etc. Specifications and forms of tender may be obtained on application to Mr. S. E Burgess, M.Inst.C.E., Borough Engineer and Surveyor, Chapter-row, South Shields.

NO DATE. — **Croston.** — GRANITE. — The Croston U.D.C. invite tenders for the supply of about 250 tons of 2½-in. Welsh granite for road-making purposes. Mr. T. Whittle, Council Offices, Croston.

Public Appointment.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
CLERK OF WORKS	Rowley Regis U.D.C.	3*l.* per week	Sept. 26

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
FREEHOLD YARD AND PREMISES, ETC., MARGATE—On the Premises	Scarlett & Goldsack	Sept. 15
CONTS. MACHINERY, JOINERY AND SAW MILL PLT., PLYMOUTH—On the Premises	Peter Hamley & Sons	do.
BUILDING ESTATE, MILL HILL—On the Estate	C. Rawley Cross & Co.	Sept. 17
FREEHOLD BUILDING AND DOWN LAND—At the White Hart Hotel, Lewes	Daniel Smith, Son, & Oakley	Sept. 29
FREEHOLD SITES, BUSHEY, HERTS—Red Lion Hotel, Bushey	Humbert & Flint	Oct. 7

PATENTS.—*Continued from page 286.*

25,766 of 1907.—THE HIGHTOWN LAND DEVELOPMENT COMPANY, LTD., and J. S. RIGBY: *Concrete Block-making Machines.*

This relates to a concrete block-making machine of the kind in which the mould has movable parts, and consists in the construction of the bottom with a liner or frame adapted to fit in said bottom or frame, and to carry the face plate or panel to form the front of the block when making one kind of face block, or alternatively to receive a single face plate or panel when making projecting face blocks; and a core having a releasing or starting screw, and fitting in removable plates or parts, and hinged side and end plates, the upper edges of which are adapted to receive and hold a frame thereon; which frame is provided with dowels on the under edge, which dowels pass through holes provided in the edges of the plates forming the sides and the ends of the mould, to enable the machine to be used for making different sizes of blocks.

27,013 of 1907.—P. ZUCCO: *Reinforced Concrete Girders or Beams.*

This relates to the use with reinforced concrete girders and beams of a beam or girder-like structural member of rolled metal, consisting of two parallel bars integral with each other, and having a tangential connecting web; one of the bars being larger in cross-section than the other, the larger bar having a flange or side web projecting tangentially therefrom at a right angle to the said connecting web; and to a metal structure for use as a reinforcement for concrete or cement girders or beams constructed of the beam or girder-like structural member as described, of which the connecting web has been cut off each side of the centre towards the ends, and the separated portions of the smaller bar have then been forced away at an angle from the larger bar, and the flange or side web has been sheared in sections, and then bent at right angles to the bar or bars, to constitute ties or reinforcing structures; and in reinforcing concrete girders and beams with the metal structure described, loose metal strips or straps may be bent round the two bars and fastened by clips for the purpose of tying the two bars together.

9,463 of 1908.—P. STRAGIOTTI: *Reinforced Concrete Constructions.*

This relates to a reinforced concrete construction, comprising the combination of horizontal upper bars, horizontal lower bars alternating with the upper bars and symmetrically disposed, bent bars extending partly parallel with the upper and lower bars and inclined at intervals from and to the upper and lower bars.

11,087 of 1908.—T. J. WOOD: *Sludge-lifter or Scoop for Removing Sludge and the like from Drains, Traps, and the like.*

This relates to a scoop or the like for lifting and removing sludge from the traps of street or other drains, and for other like uses. The scoop comprises a handle or a stem part, to one end of which is affixed, or upon one end of which is formed, a plate; which plate is preferably circular in form, and preferably about centrally attached to the stem or handle. The plate is slit or divided from its periphery towards its centre, and the two edges formed by the slit or division are disposed in different planes, and the remainder of the plate runs from one such edge to the other so that the plate roughly forms about one convolution of a helix or screw-thread. The plate is lowered on to the sludge which is to be removed, and is rotated in such a manner as to screw itself down into the sludge. When it has penetrated a sufficient depth the implement is bodily withdrawn without rotation and lifts up with it and withdraws the sludge which is above the plate.

12,371 of 1908.—C. H. DARBISHIRE: *Stone-crushing Mills.*

This relates to stone-crushing mills, and consists in so arranging an axially adjustable wearing bar that the end thereof forms a renewable part of the side cheek.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

August 20.—By WORSFOLD & HAYWARD (at Dover).

Dover.—"Dour House," Crabbe-hill, f., y.r. 45*l.*	£700
164 and 165, London-rd. (s.), f., w.r. 52*l.*	520
21, Council House-st., u.t. 86 yrs., g.r. 8*l.*, p.	130

August 21.—By E. J. GALE (at Chelmsford).

Maldon, Essex.—Freehold farm, 47 acres	1,750

August 25.—By TAYLOR & CO.

Battersea.—32 and 34, Leathwaite-rd., u.t. 73 yrs., g.r. 14*l.*, w.r. 130*l.*	425

August 27.—By WYATT & SON (at Hove).

Worthing, Sussex.—1 and 2, St. Andrew's-villas, f., y.r. 40*l.*	600

August 28.—By SPELMAN (at Norwich).

Norwich, Norfolk.—Earlham-rd., The Poplars, u.t. 43 yrs., g.r. 5*s.*, p.	500

September 2.—By E. & S. SMITH.
Battersea.—Rashleigh-st., f.g.r. 25*l.* 10*s.*, reversion in 59 yrs..... £535

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. f r estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PUBLISHER'S NOTICES.

Tel. Tel., 6113 Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME XCIV. (January to June, 1908) was given as a supplement with July 18 last.

CLOTH CASES for Binding the Numbers are now ready, price 2*s.* 6*d.* each; also

READING CASES (Cloth), with Strings, price 9*d.* each.

THE NINETY-FOURTH VOLUME of "The Builder" (bound), price Twelve shillings and Sixpence.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3*s.* 6*d.* each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 6*s.* 0*d.*
Each additional line ..... 1*s.* 0*d.*

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4*s.* 6*d.*
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Terms for series of Trade advertisements, and for front page and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

Four lines (about thirty words) or under ..... 2*s.* 6*d.*
Each additional line (about ten words) ..... 0*s.* 6*d.*

PREPAYMENT IS ABSOLUTELY NECESSARY.

. Stamps must not be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the* OFFICE, 4, CATHERINE ST., STRAND, W.C., *free of charge.* Letters will be forwarded if addressed on envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed) 1*s.*

PRICES CURRENT OF MATERIALS.

. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Best Stocks	1 8 0	per 1000 alongside, in river.
Picked Stocks for Facings	2 10 0	" delivered.
Flettons	1 7 0	" at railway depôt.
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing..	5 0 0	" " "
Best Blue Pressed Staffordshire ...	3 15 0	" " "
Do. Bullnose	4 0 0	" " "
Best Stourbridge Fire Bricks	3 14 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	10 7 6	" " "
Headers	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers...	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End.....	17 17 6	" " "
Splays, Chamferred, Squints..	15 10 0	" " "
Best Dipped Salt Glazed Stretchers	10 7 6	" " "
Headers	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers ...	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End.....	17 17 6	" " "
Splays, Chamferred, Squints..	15 10 0	" " "
Second Quality White and Dipped Salt Glazed	1 5 0	per 1000 less than best.

BRICKS, &c. (*continued*).

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	" "
Best Portland Cement	28 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11*s.* 6*d.* per yard, delivered.
Stourbridge Fireclay in sacks 27*s.* 0*d.* per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt.....	1 8½	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf...	2 1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf ...	2 2½	" "
Ancaster in blocks.....	1 10	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks ...	2 4	" "
Red Corsehill "	2 3	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks.	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.).....	2 3	per ft. super "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes).....	0 11½	per ft. cube "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		
Scappled random blocks	3 0	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes).....	1 2	" "
2 in. self-faced random flags	0 5	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r.d.
20×12 " "	13 17 6	" "
20×10 first quality,,	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
20×10 best blue Portmadoc	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green...	15 17 6	" "
20×12 " " ...	18 7 6	" "
18×10 " " ...	13 5 0	" "
16×8 " " ...	10 5 0	" "
20×10 permanent green	11 12 6	" "
18×10 " "	9 12 6	" "
16×8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles...	42 0	per 1000, at rly depô
Hip and Valley tiles ...	3 7	per doz. "
Best Broseley tiles	50 0	per 1000 "
Do. Ornamental tiles	52 6	" "
Hip and Valley tiles ...	4 0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards) ...	57 6	per 1000 "
Do. Ornamental do.....	60 0	" "
Hip tiles	4	per doz. "
Valley tiles	3 0	" "
Best Red or Mottled Staffordshire do. (Peakes).....	51 9	per 1000 "
Do. Ornamental do.	54 6	" "
Hip tiles	4 1	per doz. "
Valley tiles.....	3 8	" "
Best "Rosemary" brand plain tiles	48 0	per 1000 "
Best Ornamental tiles.....	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles.....	3 8	" "
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 "
Do. pressed.....	47 6	" "
Do. Ornamental do.....	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles.....	3 6	" "
Staffordshire (Hanley) Reds or Brindled tiles.....	42 6	per 1000 "
Hand-made sand-faced.....	45 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 6	" "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6...	0 10 0	less than 7 in. and 8 in.
Deals: seconds.....	1 0 0	less than best.
Battens: seconds.....	0 10 0	" "
2 in. by 4 in. and 3 in. by 6 in....	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in...	8 10 0	... 9 10 0
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	0 0	"

WOOD (*continued*).

BUILDING WOOD (*continued*)—	At per load of 50 ft. £ s. d.	£ s. d.
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.) ...	3 12 6	... 3 15
Small timber (6 in. to 8 in.).....	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0
JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.....	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 11 in.	18 10 0	... 20 0 0
" " 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.....	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.....	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.....	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 10 0
Battens.....	11 0 0	... 12 0 0
Second white deals, 3in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
Battens	10 0 0	... 11 0 0
Pitch-pine: deals.....	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube..	0 3 6	... 0 5 0
Dantzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	... 0 3 9
Small "	0 2 6	... 0 2 6
Wainscot Oak Logs, per ft. cube..	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¾ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch...	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak, per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube.....	0 4 0	... 0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	... 0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. " "	0 14 0	... 0 18 0
¾ in. by 7 in. white " "	0 10 0	... 0 11 6
1 in. by 7 in. " "	0 12 9	... 0 15 0

6 in. at 6*d.* to 9*d.* per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	... 7 10 0
Compound Girders, ordinary sections	9 0 0	... 10 0 0
Steel Compound Stanchions	11 0 0	... 12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	... 10 0 0
Flitch Plates	9 0 0	... 9 10 0
Cast Iron Columns and Stanchions including ordinary patterns.....	7 10 0	... 8 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	8 10 0	... 9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	... 9 5 0
Staffordshire "Marked Bars" ...	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 5 0
Hoop Iron, basis price	9 5 0	... 9 10 0
" " Galvanised	17 0 0	... —

(*And upwards, according to size and gauge.)

Sheet Iron Black—		
Ordinary sizes to 20 g.	9 15 0	... —
" " 24 g.	10 15 0	... —
" " 26 g.	12 5 0	... —
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	15 0 0	... —
Ordinary sizes to 22 g. and 24 g.	15 10 0	... —
" " 26 g.	16 10 0	... —
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	18 0 0	... —
" " 22 g. and 24 g.	18 10 0	... —
" " 26 g.	20 0 0	... —
Galvanised Corrugated Sheets—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	... —
" " 22 g. and 24 g.	14 15 0	... —
" " 26 g.	16 5 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 8 ft. by 20 g. and thicker	12 0 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	... —
" " " 26 g.	15 0 0	... —
Cut Nails, 3 in. to 6 in.	10 10 0	... 11 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	16 12 6	... —
Pipe in coils	19 12 6	... —
Soil pipe	17 2 6	... —
Compo pipe	20 12 6	... —
ZINC—Sheet—		
Vieille Montagne ton	27 5 0	... —
Silesian	27 0 0	... —
COPPER—		
Strong Sheet per lb.	0 1 0	... —
Thin "	0 1 1	... —
Copper nails "	0 0 10	... —
Copper wire "	0 0 10	... —
BRASS—		
Strong Sheet "	0 0 11	... —
Thin "	0 1 0	... —
TIN—English Ingots "	0 1 4½	... —
SOLDER—Plumbers' "	0 0 7	... —
Tinmen's "	0 0 9½	... —
Blowpipe "	0 0 11½	... —

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.	
15 oz. thirds	2½d. per ft. delivered.
" fourths	1¼d. " "
21 oz. thirds	3d. " "
" fourths	2¼d. " "
26 oz. thirds	4d. " "
" fourths	3d. " "
32 oz. thirds	4½d. " "
" fourths	4¼d. " "
Fluted Sheet, 15 oz.	3¼d. " "
" 21 oz.	4¼d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.	
Hartley's	2¼d. per ft. delivered.
"	2¾d. " "
"	2¾d. " "
Figured, Oxford Rolled, and "Oceanic" Glass, white	3¾d. " "
" tinted	5¼d. " "
OTHER GLASS—	
"Arctic" Glass, white	4d. " "
" tinted	5¼d. " "
" ruby and opalescents	1s. " "

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 0
" " in barrels	"	0 2 1
" " in drums	"	0 2 3
Boiled " in pipes	"	0 2 2
" " in barrels	"	0 2 3
" " in drums	"	0 2 5
Turpentine in barrels	"	0 2 5
" in drums	"	0 2 8
Genuine Ground English White Lead	per ton	21 0 0
Red Lead, Dry	"	20 0 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 a.m. on *Thursday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcement of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

BARNES.—For the erection of a new council school for boys, for the Surrey Education Committee. Messrs. Jarvis & Richards, Architects, 10, Queen Anne's-gate, Westminster, S.W.:—

G. Kemp	£5,568	T. J. Hawkins & Co.	£5,180
Goddard & Sons	5,465	W. Lowe	5,090
A. N. Soole & Son	5,412	J. Burges & Sons	5,071
Martin, Wells & Co., Ltd.	5,380	W. Lawrence & Son	4,974
W. Smith & Sons	5,298	R. T. Hughes & Co., Ltd.*	4,924
D. Waller	5,209		

BARROW-IN-FURNESS.—For three public conveniences: (*a*) Holker-street, (*b*) Church-street, (*c*) Michaelson-road, for the Corporation. Mr. J. Walker Smith, Borough Engineer. Quantities by Borough Engineer:—

T. Brown, Barrow-in-Furness* .... £210 16 10 (*a*); 232 0 11 (*b*); 50 15 6 (*c*)

BATH.—For alterations and repairs to Nos. 24 and 25, New Bond-street, for the Corporate Property Committee. Mr. Alfred J. Taylor, M.S.A., architect, 18, New Bond-street, Bath. Quantities by Messrs. Amor & Underwood, Bath:—

Chancellor & Sons	£439 0	Erwood & Morris	£337 19
W. Webb	427 0	W. Clack	337 12
Williams & Pickford	425 0	Wills & Sons	334 0
Howard, Sons, & Parsons	380 0	Hayward & Wooster	325 0
Long & Sons	350 0	F. J. Amery, Grove-street, Bath*	315 0

BRENCHLEY PADDOCK WOOD.—For the erection of Council school to accommodate 200 boys, for the Kent Education Committee. Mr. Wilfrid H. Robinson, M.S.A., Architect to the Committee:—

Sykes & Son	£2,325 15 0
J. Crates & Son	2,222 0 0
A. C. Startin	2,221 15 4
W. H. Simmonds	2,140 0 0
J. Gregory	2,125 0 0
J. W. Ellingham	2,100 0 0
A. H. Wood	2,070 0 0
G. & F. Penn	2,065 0 0
Davis & Leaney	2,043 0 0
R. A. Lowe & Co.	2,037 0 0
J. Lonsdale	2,034 0 0
K. C. Jarvis	2,030 0 0
Stephens, Bastow, & Co., Ltd.	1,996 0 0
G. H. Denne & Son	1,990 0 0
F. H. Pye	1,990 0 0
Barden & Head	1,950 0 0
L. Edwards	1,918 0 0
Strange & Sons	1,898 0 0
J. Jarvis	1,895 0 0
G. Browning	1,890 0 0
W. Shippam	1,861 0 0
W. T. Burrows	1,819 15 0
E. Green	1,784 13 1
Martin & Co.	1,783 0 0
Fairman & Blackman	1,780 0 0
J. Podger & Sons	1,775 0 0
C. E. Skinner	1,767 0 0
C. B. Benfield	1,765 0 0
J. A. Davison, West Malling*	1,746 0 0

BROMLEY.—For erecting house at Shawfield Park. Mr. W. James Pamphilon, architect, 21, Finsbury-pavement, E.C.:—

Pearce Bros	£750	Crossley & Son	£665
Dutholt	730	Graty	648
Arnaud	719		

BRUMBY and FRODINGHAM.—For sewerage and sewage disposal works (Contract No. 1), for the Urban District Council. Messrs. Strachan & Weekes, engineers, 9, Victoria-street, Westminster, S.W.:—

Hughes & Lancaster	£1,664 19 0
Adams Hydraulics, Ltd.	1,529 7 0
Goddard, Massey, & Warner	1,244 4 2
D. Adamson & Co., Dunkinfield*	1,212 13 6

BURTON-ON-TRENT.—For construction of new sewers in four streets (Stapenhill and Winshill sewerage), for Burton-on-Trent Town Council:—

G. F. Tomlinson, Derby* £658

COLWYN BAY.—For building first portion of St. Paul's Mission Church. Messrs. J. M. Porter & Elcock, architects, Estate Offices, Colwyn Bay:—

Jones & Pritchard	£1,670 0 0	O. Jones & Hughes	£1,100 0 0
S. Bond & Sons	1,472 3 6	J. O. Davies, Bron-y-Nant, Colwyn Bay*	1,065 8 0
E. Jones & Son	1,300 0 0		
T. Jones	1,198 0 0		
J. Tucker & Sons	1,120 3 0		

CROYDON.—For erecting a school for 868 children, Tavistock-grove, for the Education Committee of County Borough of Croydon. Mr. H. Carter Pegg, F.R.I.B.A., Thornton Heath. Quantities by Mr. Mansfield Price, Salatin, Surrey:—

Foster & Dickson	£13,995 0
F. G. Minter	13,783 0
Denne & Son	13,500 0
J. Smith & Sons, Ltd.	13,300 0
R. Cook & Sons	13,112 0
Patman & Fotheringham, Ltd.	13,000 0
W. Johnson & Son, Ltd.	12,990 0
J. Bowyer & Co., Ltd.	12,987 0
W. F. Blay	12,987 0
Grace & Marsh	12,950 0
E. P. Bulled & Co.	12,875 0
W. Akers & Co., Ltd.	12,861 0
Spencer, Santo, & Co., Ltd.	12,772 15
H. Lovatt, Ltd.	12,712 0
W. Moss & Sons, Ltd.	12,600 0
E. J. Saunders	12,445 0
J. Allen & Sons	12,400 0
W. Smith & Sons	12,384 0
G. E. Wallis & Sons, Ltd.	12,383 0
J. Appleby & Sons	12,355 0
Sabey & Son, Ltd.	12,200 0
B. E. Nightingale	12,151 0
W. Wallis, 207-209, High-road, Balham, S.W.*	12,100 0

DEVONPORT.—For erecting a higher elementary school at Keppel-place, for the Education Authority. Messrs. Thornely & Rooke, architects, 29, St. Aubyn-street, Devonport:—

J. Paynter	£13,980	Lapthorn & Co.	£12,640
Pearce Bros	13,787	Pethick Bros.	12,777
Wakeham Bros.	13,681	S. Roberts, Ltd.	12,098
Matcham & Co.	13,319	G. B. Turpin	11,997
J. Crockerell	12,983	Pearn Bros.	11,943
A. Andrews	12,980	A. N. Coles, Plymouth*	11,180
W. E. Blake	12,975		
A. N. Lethbridge & Son	12,898		

DOWLAIS.—For erecting new infants' school to accommodate 500 children, for the Merthyr Tydfil Education Committees. Mr. J. Llewellin Smith, Architect, Town Hall, Merthyr Tydfil:—

E. Williams, Dowlais* £7,707

DUNHAM MASSEY.—For constructing a detritus tank and screening chamber at Sewage Works, Woodcote, for the Altrincham Urban District Council. Mr. H. E. Brown, Surveyor, Town Hall, Altrincham:—

Wellerman Bros.	£704 14 9	J. J. Blackburn	£440 0 0
G. Bozon	660 0 0	J. Hamilton & Sons, Altrincham*	426 0 0
G. Bell & Sons, Ltd.	640 16 0		
J. Bentley & Co.	486 1 0		

FRINTON-ON-SEA.—For street works, Fourth-avenue, for the Urban District Council. Mr. E. M. Bate, Surveyor, Council Offices, Frinton-on-Sea. Quantities by the Surveyor:—

J. Smart & Son	£3,978	A. E. Farr	£3,378
Constable, Hart, & Co.	3,726	P. Wilson & Co.	3,292
Fry Bros.	3,667	Hardy & Co.	3,271
Wilson, Border, & Co.	3,416	W. Shepherd & Sons	3,247
E. Howes	3,411	Tarmac, Ltd., Ettingshall, Wolverhampton*	3,220

FRINTON-ON-SEA.—For sewering the Crescent, for the Urban District Council. Mr. E. M. Bates, Surveyor to the Council, Frinton. Quantities by the Surveyor:—

P. Wilson & Co.	£223 12 4	Wilson, Border, & Co.	£204 3 9
Fry Bros.	221 12 5	E. Howes	201 17 0
Hardy & Co.	215 0 0	A. E. Farr, Frinton-on-Sea*	191 5 6
W. Shepherd & Sons	212 3 11		

GAINSBOROUGH.—For proposed refuse destructor buildings, for the Urban District Council. Mr. S. W. Parker, Engineer and Surveyor, Council Offices, Gainsborough:—

A. J. Elmes, Gainsborough* £2,000

HOUGHTON-LE-SPRING.—For the supply of about 400 yds. of 6-inch cast-iron pipes, for the Urban District Council. Mr. John W. Holbrook, Engineer and Surveyor to the Council:—

British Mannesmann Tube Co., Ltd., Salisbury House, London-wall, E.C.* £88 15

HOUNSLOW.—For making up Bulstrode-avenue, for the Urban District Council of Heston and Isleworth. Mr. J. G. Carey, Engineer and Surveyor, Council House, Hounslow:—

W. Wilson	£986 19 2
W. Griffiths & Co., Ltd.	985 5 8
Parker & Colbourn	909 9 0
W. H. Wheeler & Co., Ltd.	906 11 9
T. Adams	903 0 0
M. Thacker & Co.	884 0 0
W. Shepherd & Sons	869 18 9
E. Parry & Co.	847 9 9
T. Watson, jun.	825 0 0
J. Mowlem & Co., Ltd.	820 0 0
R. W. Swaker	817 0 0
McLean & Co.	811 19 0
J. Ball	808 0 0
T. A. Chapman, Hounslow*	800 12 0

KINGSWEAR (Devon).—For erecting a villa residence, for Mr. E. Horne. Mr. T. O. Veale, surveyor, Castle View, Dartmouth:—

H. Drew	£887 0	J. Triggs	£616 10
Crocker	695 0	J. Back	599 0
W. G. Row	680 0	Bovey & Sons, Torquay*	520 0
J. Short & Sons	669 0	Anderson‡	473 0
Knight	629 0		

‡ Tender informal.

KINSLEY (near Wakefield).—For work and repairs to houses, for the South Kirkby, Featherstone, and Hemsworth Collieries, Ltd. Messrs. Garside & Pennington, architects, etc., Pontefract and Castleford. Quantities by the architects:—

Contract No. 1.

G. Clements, Featherstone, near Pontefract* £1,630 15 10

Contract No. 2.

Simpson & Watson, Hemsworth* . £1,316 8 9

LEICESTER.—Extension to Fairfax Mills. Messrs. Tait & Herbert, architects. Leicester and Coventry:—

A. & W. Chambers	£1,007	Clarke & Garrett	£909
Hutchinson & Son	993	Bentley & Co.	901
H. Herbert & Sons	989	F. Elliott, Leicester*	880
Hardington & Elliott	971		

LONDON.—For alterations to 74, Brook-street, W., for the Hon. Caroline Hozier. Mr. F. W. Foster, architect, 41, Bedford-row, W.C.:—

J. Kirkby* £635

LONDON.—For proposed alterations at 7, Hyde Park-gate, for Mr. Arthur Samuel. Mr. F. W. Foster, architect, 41, Bedford-row, W.C.:—

J. Kirkby	£1,368	Simmonds Bros.	£1,224
Foxley & Co.	1,335		

LONDON.—For additions to No. 45, Baker-street. Mr. F. W. Foster, architect, 41, Bedford-row, W.C.:—

Foxley & Co.* £1,036

LONDON.—For proposed alterations to No. 2, Carlton House-terrace. Mr. F. W. Foster, architect, 41, Bedford-row, W.C.:—

F. G. Minter	£2,497	J. Carmichael	£2,297
J. Simpson & Sons	2,436	Foxley*	2,044
Whitby	2,300		

FLEETWOOD.—For erecting new ward, etc., at the Cottage Hospital, for the Governors. Mr. Bertram Drummond, A.R.I.B.A., 54, Alfred-terrace, Fleetwood. Quantities by the architect:—

		Alternative Estimates. No. 1.	No. 2.	No. 3.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
T. Cottam, Preston	1,650 0 0	35 0 0	100 0 0	25 0 0
Smith Bros., Ltd., Blackpool	1,597 0 0	52 18 0	94 10 0	28 15 0
T. Riley, Ltd., Fleetwood‡	1,474 17 10	30 13 8	98 5 0	15 9 3
R. Leach & Son, Cleveleys	1,670 0 0	46 11 0	93 19 1½	18 1 4½
J. Eaves, Blackpool	1,538 0 0	32 10 0	94 0 0	28 0 0

‡ Recommended by the Committee for acceptance.

LONDON.—Proposed rebuilding of Nos. 439 to 451, Edgware-road. Mr. F. W. Foster, architect, 41, Bedford-row, W.C. Quantities by Mr. Ernest T. Verity :—

J. Simpson & Sons	£8,193	Allen & Co.	£7,963
F. G. Minter	8,177	Rice & Sons	7,777
J. Carmichael	8,157	C. Gray*	7,700
J. Allen & Sons	7,995		

LONDON.—For proposed rebuilding of Nos. 9 and 10, Marble Arch. Mr. F. W. Foster, architect, 41, Bedford-row, W.C. Quantities by Mr. Ernest T. Verity :—

Rice & Sons	£12,882	F. G. Minter	£11,420
Simpson & Sons	12,293	J. Allen & Sons	11,400
J. Carmichael	11,759	Allen & Co.*	11,250
C. Gray	11,679		

LONDON.—For alterations and additions to No. 42, Bryanston-square, for Mr. H. Beaumont. Mr. F. W. Foster, architect, 41, Bedford-row, W.C. Quantities by Mr. Ernest T. Verity :—

Kirkby	£4,987	Minter	£4,593
Bywaters	4,765	Carmichael	4,527
Foxley	4,700	Whitby*	4,285

LONDON.—For alterations and additions to Nos. 12 and 13, Montagu-place. Mr. F. W. Foster, architect, 41, Bedford-row, W.C. :—

J. Kirkby £1,632

MACCLESFIELD.—For street improvements, Gas-road, Waters-green, etc., for the Corporation. Mr. Charles Wm. Stubbs, Borough Surveyor. Quantities by the Borough Surveyor :—

W. H. Worthington, 61, Rusholme-road, Manchester* £2,351 9 6

MERTHYR.—For erecting wood frame building covered with corrugated iron, for use as temporary classroom, etc., for the Merthyr Tydfil Education Committee :—

F. D. Cowieson & Co., Glasgow* £380

NEW SARUM.—For erecting stables in Friary-lane, for the Urban District Council. Mr. W. J. Goodwin, City Engineer and Surveyor, Municipal Offices, Salisbury :—

Tydeman Bros.	£215 0 0	J. Jennings & Son	£175 9 0
E. Preece	210 0 0	Billett & Musselwhite	172 1 10
T. Dawkins	204 0 0	Collins & Son, 134, Devizes-road, Salisbury*	171 18 3
H. Tryhorn	198 10 0		
R. Moulding	192 17 7		
E. T. Jenkins	180 6 0		
Vincent & Folland	178 14 6		
Wart & Way	175 18 9		

NUNEATON.—For a waterworks filter-bed, for the Corporation. Mr. F. C. Cook, Water Engineer, Municipal Offices, Nuneaton :—

Davidson & Miller	£1,783 13 8
Hobrough & Co.	1,737 12 4
Liverpool Hennebique Ferro-Concrete Contracting Co., Ltd.	1,553 9 9
Yorkshire Hennebique Contracting Co., Ltd., Leeds*	1,548 2 3

OLLERTON (Notts).—For water-supply works, for Southwell Rural District Council. Messrs. Sands & Walker, engineers, Milton-chambers, Nottingham :—

A. Herbert, Mansfield, Notts* £1,390 2 0

ROCHESTER.—For making up, paving, and channelling Bingham-road, Frindsbury, for the Corporation. The City Surveyor, Rochester :—

J. C. Trueman, Ltd.	£500 5 9	J. Mowlem & Co., Ltd.	£443 17 4
Chittenden & Simmons, Ltd.	437 14 8	G. W. Auger	429 4 0
A. W. Price	456 19 0	F. Miskin, Ltd., Rochester*	423 12 8

SHEFFIELD.—For constructing Fitzalan-square conveniences and terrace, etc. Mr. C. F. Wike, M.Inst.C.E., City Surveyor :—

G. Longden & Son, Ltd.* £6,580

STROOD.—For making-up, paving, and channelling Bingham-road, Trindsbury, etc., for the Rural District Council of Strood :—

Chittenden & Simmonds, Ltd.	£139 19 4	A. Price	£122 11 4
J. C. Trueman, Ltd.	139 19 0	F. Miskin, Ltd.*	118 11 7
		G. W. Auger	117 1 6

TWYNYRODYN.—For erecting seven classrooms and cookery-room, cloakrooms, etc., at the Council Schools, for the Merthyr Tydfil Education Committee. Mr. J. Llewellin Smith, Architect, Town Hall, Merthyr Tydfil :—

A. J. Colborne, Swindon* £8,683 16

SUTTON (Surrey).—For laying-out, forming, metalling, and draining about 500 ft. of road on the Hall Mead estate. Messrs. Chart, Sons, & Reading, surveyors, Union Bank-chambers, Croydon :—

F. Jackson	£1,042	Potter & Co.	£552
H. Soan	640	J. C. Trueman	529
Mowlem & Co.	636	Free & Sons	525
F. White	620	F. Potter	511
Harber & Co.	590	Parry & Co.	507
E. & E. Ilse	585	Killingbeck & Co.	505
G. W. Aldy	573	W. Hall	499
Wheeler & Co., Ltd.	564	E. B. Yewen	409

THAMES DITTON.—For the erection of a new boys' Council School, for the Surrey Education Committee. Messrs. Jarvis & Richards, Architects to the Surrey Education Committee, 10, Queen Anne's-gate, S.W. :—

J. Wheatley & Sons, Ltd.	£4,900	R. T. Hughes & Co. Ltd.	£4,394
E. Potterton	4,661	D. Waller	4,325
E. Stokes & Sons	4,538	J. Burges & Sons	4,272
S. N. Soole & Son	4,469	W. Lawrence & Son	4,229
Martin, Wells & Co. Ltd.	4,435	T. J. Hawkins & Co*	4,139

TILBURY DOCKS.—For erection of dwelling-house, motor-house, etc., for Dr. A. H. Fowler, Tilbury. Mr. Christopher M. Shiner, A.R.I.B.A., architect, 10, John-street, Adelphi, W.C., and Gate House, Grays, Essex :—

Hammond & Son	£1,410 0	J. Dobson	£1,200 0
H. J. Carter	1,285 0	G. Brown	1,157 10
G. W. Cooke	1,242 0	Brown Bros*	1,132 0

TORPOINT.—For additions to the Wesleyan Church. Messrs. Thornely & Rooke, architects, 11, The Crescent, Plymouth :—

Pethick Bros., Ltd.	£1,868 0 0	W. E. Blake	£1,584 10 0
J. Short	1,748 1 11	S. Roberts, Ltd.	1,583 0 0
Jenkin & Son	1,728 0 0	J. Palmer	1,572 0 0
D. Carwithen	1,704 0 0	A. N. Coles	1,528 0 0
F. Bartlett	1,703 10 0	F. H. Snell	1,448 0 0
J. W. S. Trevan	1,691 0 0	W. Rothery	1,446 0 0
A. R. Lethbridge & Son	1,685 0 0	Pearn Bros.	1,438 0 0
A. Andrews	1,659 0 0	I. Paynter, Plymouth*	1,365 0 0
G. B. Turpin	1,635 0 0		

WHETSTONE (Leicestershire).—For the erection of a new Baptist church. Messrs. Tait & Herbert, architects, Leicester and Coventry :—

P. Rourke	£2,200	A. & W. Chambers	£2,139
Halford & Sons	2,197	Clarke & Garrett	2,100
Hutchinson & Son	2,180	Rudkin & Son	2,045
Kellett & Son	2,140	F. Elliott, Leicester*	2,031

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REVIEWS OF BOOKS:

Monthly Supplement to "The Builder."

Books.

The Modern Plumber and Sanitary Engineer. Edited by G. LISTER SUTCLIFFE, A.R.I.B.A. Divisional—Volumes III., IV., and V. and VI. (The Gresham Publishing Company.)

We have previously noticed the earlier volumes of this large publication, written by sixteen specialist contributors under the editorship of Mr. Sutcliffe, and which aims at being a complete repertoire of practical information on sanitary subjects up to the date of publication.

Volume III. deals with the subjects of "Hot-water Services" (by Mr. A. Hening Shaw); "Warm Air and Ventilation" (Mr. Harold Griffiths); and "Sanitary Plumbing and Drainage" (Mr. E. Thomas Swinson). The Hot-water Service section is very complete in its explanation both of theory and practice, and is very well and completely illustrated by diagrams, those forming separate plates being printed in colour to distinguish better the different elements in a hot-water circulating system. Both in this and in the Warm Air and Ventilation section the theory is but briefly gone into, sufficiently to explain the scientific basis on which systems of supply, warming and ventilation are carried out; the bulk of the exposition of each subject is devoted to its practical working and the explanation by diagram of the means employed.

In the chapter on "The Natural Method and the Mechanical" in ventilation the author does not omit to point out how extremely uncertain in its action is that "natural ventilation," for which such exaggerated claims are made by people who have "natural ventilation" patents to recommend; though, in remarking on the uncertainty of all ventilation dependent on wind pressure as a motive force, he should have added (what many people seem to overlook) that the conditions under which ventilation is most desired, *i.e.*, on a hot calm day, are exactly those under which wind pressure ventilation fails to act at all. In regard to the best point for admission of fresh air into a room, the author adopts the view (which has become popular among ventilation specialists lately) that admission should be at a high point and extract at the floor; but, while there is more to be said in favour of that view than used to be supposed, we do not by any means regard it as a settled fact, and the sketch, Fig. 433, to which the reader is referred, proves nothing; it only represents the author's own opinion as to the behaviour of fouled air in a room.

The section on Sanitary Plumbing, which commences in Vol. III. with the subject of "Pipes and Traps," is continued into Vol. IV., in which the important subjects of Baths and Water-closets are dealt with. In regard to baths fixed without casing, which are now rightly superseding the cased-up baths, the author points out that the un-cased bath is too often placed with its long side against the wall so that the space at the back cannot be got at, and the accumulation of dirt is almost as bad as within a casing. Baths, as he says, "ought to be fixed several inches away from the surrounding walls, and clear of the floor, so as to render it easy to cleanse the sides of the bath, the walls, and the floor." The narrow dimensions of the bath-room often render it difficult to do this, and in houses of a small class these narrow dimensions are unavoidable; but in larger houses bath-rooms are often made much smaller than they ought to be. A bath-room should not be a mere closet with just room for the bath and for dressing; it should be a fairly spacious room with something of architectural and decorative fancy to render it attractive.

Nothing seems to be said about the size of supply and waste pipes, in regard to which it should be observed that supply pipes to baths are usually too small, necessitating an inconvenient delay in filling the bath; of course, for safety, they must be less in combined sectional area than the overflow, but they might be made larger than they generally are. We agree with the writer that supply taps should discharge above the level of the overflow; the inconvenience of steam from the hot supply is not of very much account, and it is easier to mix hot and cold water as required. The supply at the bottom of the bath, through a mixing chamber, looks very neat, but it has the defect that if the water is too hot the cold supply admitted does not mix for some time, but merely forms a cold stratum at the bottom of the bath; it will not rise through the hot water. In regard to metal baths with rolls on the edge there is another point which might be mentioned; that if the rolls were only turned inward instead of outward they would stop the wash of water over the edge of the bath, which in a full bath for total immersion often happens. An architect patented this alteration many years ago, and it was illustrated in our pages; but the sanitary manufacturers to whom it was proposed would not take it up, as it was not their own idea. We may add also that baths are usually too small for total immersion (the most desirable form of bath); 5 ft. 6 in., the largest size usually sold, is not really large enough. Bath-rooms and baths generally, in the best class of houses, should be much more liberally dealt with than they usually are at present.

The chapters on water-closets, slop-sinks, and urinals seems as well done as they could be; and the larger subject of "Drainage" is well treated; though we are inclined to ask why should the intercepting trap between house-drain and sewer be "as near the boundary fence as possible"? It is surely better to stop out also as much of the house-drain as possible, which is also in its way a small sewer. Chapters are added on Testing Drains and on Sewage Disposal. These are simply descriptive of various methods, without the special recommendation of any. The remainder of the fourth volume is occupied with the subject of Speaking-tubes and Electric Bells and Telephones, the latter subject being very fully treated, with ample explanatory diagrams.

Vol. V. is occupied with the subjects of Electric Lighting and Heating, and Hot-water and Steam-warming Apparatus. The latter subject is treated at great length and with a profusion of diagrams, by Mr. F. A. Raynes, head of the department of plumbing in the Glasgow and West of Scotland College, and seems to sum up everything that is known on the subject. The sixth volume is occupied with Gasfitting, Glazing, and Specifications, Quantities and Estimates (in special reference of course to plumbing); this last is by Mr. W. E. Davis, who gives both specifications and a long series of pages of model quantity-taking for plumber's work, one of the most difficult branches, as he says, of quantity-taking, since a great deal of the work is such as cannot be shown in the drawings. Shop Management and Book-keeping, to which a chapter is devoted, seems hardly within the proper scope included in the title of the work, but it adds another item to its usefulness. Appendixes are added on Water Supply; Trade lists of metal sheets, tubes, etc.; Tables and Mensuration; and Temperature; and a thorough and copious Index to the whole publication is added.

This is a monumental work on the subject on which it treats, and reflects the highest credit on its editor and his numerous able assistants. It is a book which every young architect, face to face with the multifarious difficulties of his profession, should possess; it will be invaluable to him.

Cast-iron House Drainage, with Especial Reference to the Drainage of Town Houses. By GERARD J. G. JENSON, C.E. (London: The Sanitary Publishing Company. 1908.)

THIS little book of 206 pages deals not only with cast-iron drains, but also with the general design of drainage systems, and their ventilation, flushing, testing, etc., and can be recommended as a convenient and useful book on the subject. The seven chapters on lavatories, baths, sinks, and other sanitary fittings are beyond the scope of the title, and are not as complete, and therefore not as useful to the student, as the other parts of the book.

Handbook of Farm Buildings, Ponds, etc., and their Appurtenances. By THOMAS WINDER, A.M.Inst.C.E. With a Chapter on the Application of Electricity to Farming and Agriculture by J. W. Beauchamp. (Sheffield: Pawson & Brailsford.)

THIS is a practical book by a practical man, and as such is based on experience rather than science. The author being surveyor to the Duke of Norfolk's Yorkshire and Derbyshire estates, and agent to the Yorkshire estates of the Earl of Effingham, his thirty years' experience is of value, and much useful information is given in his book. Details rather than types of planning are mainly considered, and the great problem of planning a homestead so as to minimise labour whilst maintaining the highest efficiency of output scarcely seems to have been sufficiently realised, or at least treated by the author. Farming, to be made profitable nowadays, must be regarded as a manufacture, and the homestead planned as a factory. Possibly the author considers, and with reason, that this is the work of the designer of farm buildings; but, as the value of such a book as the present is the assistance it affords to the young or inexperienced designer, too much stress on details of construction may tend to obscure the prime essential.

The position of the homestead in relation to the land is the first point with which our author deals, but beyond pointing out that it should be near, but not too near, a public road, the pros and cons of an elevated or lowly position are the only considerations treated. In olden days homesteads were usually, as we have all noticed, located on the lower levels, often in a hollow, one reason, if not the chief, being the greater probability of finding water. This, however, was before the days of rams, the advantages of which our author points out. Speaking

of water, it is interesting to note that Mr. Winder, a practical man, seems; though guardedly, to express faith in the water-diviner. Much useful information is given on water supply and storage, but we might suggest that the value of rain-water tanks is much increased by the provision of a simple form of filter, an adjunct that does not appear in any of the examples illustrated.

We are surprised that non-retentive liquid manure tanks, or, in plain English, cesspools, are regarded as admissible, and even advisable. Surely both hygiene and economy are dead against such objectionable institutions. The successful modern factory is the one that best utilises by-products, and waste of manure must be prejudicial to success in farming, to say nothing of the poisoning of one's own or someone else's water supply.

One excellent feature of this book is the attention given to the artistic aspect of farm buildings, and we are fully in accord with the author's advocacy of the use of local material. It is, however, scarcely correct that stone walls keep the interiors of buildings at a more equable temperature than brick because they are thicker. Stone is a better conductor of heat than brick, and it needs a considerably greater thickness to obtain more resistance to temperature. This is but one instance where the author's experience is inferior to science, as often happens to practical men, who are apt to generalise from the insufficient data that their experience supplies. Amusing is the explanation of the effect of oak on lead. The white powder to which lead is reduced by the tannic acid of oak does look like, though it is not, as is here stated, "white lead," any more than this is "oxide of lead."

When Mr. Winder does not touch on science, and keeps to practical experience, his teaching is valuable. Very excellent is his account of thatching, and the admirable reed thatch of East Anglia rightly receives full description. Covered stock-yards and Dutch barns, both of which mark the difference between progressive farming and the old-fashioned, easy-going style, are well described. We doubt, however, the advocacy of the pigeon-cote as an adjunct to a modern farm. When the pigeon-cote was the exclusive privilege of the lord of the manor, and the feathered marauders took toll of yeomen's crops, it was a profitable concern, but we doubt whether the modern farmer whose own fields provide the birds' food would find that it would pay him.

A most interesting chapter is that on the application of electricity to farming. The possibility of the easy transmission of power to considerable distances and the immediate connexion or disconnexion of power to work. together with the divisibility of apparatus. seem to point to electricity as an ideal source of power for farmwork, provided the initial generation can be economically effected.

Flats, Urban Houses, and Cottage Homes. The text by FRANK T. VERITY, EDWIN T. HALL, GERALD C. HORSLEY, and W. SHAW SPARROW, Editor. (London: Hodder & Stoughton.)

THIS is stated on the title-page to be a companion volume to "The British Home of To-day," and as such is clearly intended for the general public as much as, if not more than, for the professional reader. Well printed on good paper, and largely illustrated by photographs and coloured plates, it is made attractive for those who like pretty pictures, and who "know what they like" without any further pretensions to skilful criticism. But, nevertheless, though not on the same plane with Mr. Sydney Perks's valuable work on "Residential Flats," there are sufficient plans to scale to make the book useful to the professional architect who is a neophyte at flat-planning.

Necessarily, in order that the compilation may have any pretence to adequacy, illustrations are given of the work of some of our leading specialists in the architecture of flats, but there is also in evidence the work of the group of "smart" advertising architects, whose names are usually to be found amongst illustrations of modern architecture in publications that may be expected to have their greatest circulation outside professional circles, but whose works are not often seen in the technical press. Even in the present instance these gentlemen do not contribute plans, but only pretty pictures of their designs, as to which, indeed, it is somewhat difficult to discern any logical reason for their selection.

The text occupies but a small portion of the book, despite the use of large type and wide margins, but what there is contains useful information and valuable criticism.

Mr. Verity opens with some Introductory Notes on the Designing of Flats de Luxe, or Mansion Flats, which are short, crisp, and sensible, though the instruction they impart is perhaps somewhat obvious to an experienced and thoughtful planner of flats, and the novice is hardly likely to have an opportunity of commencing his production of flats with those of this type.

The editor, Mr. W. Shaw Sparrow, writes Chapter I., on "A Flat-dweller's Point of View," and points out the various grades of flats into which he has grouped his illustrations, mansion flats, flats for the well-to-do, flats for the middle classes, inexpensive flats, and bachelors' flats. He suggests moderate rents, co-operative catering, and various ideas for the treatment of details in planning that his experience in the shortcomings of the flat system has emphasised as desirable in the ideal flat.

Chapter II., by Mr. Edwin T. Hall, is a capital account of the Parisian flat, and is illustrated by numerous plans, critically described, of modern French work. Although the chapter is entitled "Flats—British and Foreign," there is little about British work, and that little more by way of comparison than description, whilst the foreign work, save for reference to one or two examples in Vienna, is taken solely from Paris.

The third chapter, on "Urban Houses and Cottage Homes," by Mr. Gerald C. Horsley, is pleasantly written, and instructive to the layman in art principles, with, of course, the usual talk about the craftsman that a well-read architect to-day expects from the author. Obviously the subject is sufficiently extensive to fill the whole of one of Mr. Sparrow's productions, but is here introduced to make up the weight of pretty pictures that can be bought for a crown, which presumably the editor found difficult from the limited field of flats. It also assists in giving the "short story" flavour that seems to be so profitable nowadays in the provision of literary pabulum for the general public.

Electrical Engineering. W. SLINGO and A. BROOKER. New Edition revised by W. Slingo, assisted by T. F. Wall, M.Sc. (London: Longmans, Green, & Co. 1908.)

ELECTRICAL engineering has made such rapid progress since the first edition of this book appeared that it is no wonder it has now attained almost encyclopædic dimensions. We hope that the authors will consider the advisability in the next edition either of omitting some of the subjects discussed, or of dividing the book into two or three volumes with a suitable rearrangement of the subject-matter.

The additional matter has been well chosen, but the definitions in several places lack rigour, and the descriptions could occasionally be pruned down with advantage. The following is an example of an aggravating style of writing which is occasionally used:—Page 740: "it may be pointed out that the high conductivity, or, shall we say, the relatively low resistance." The non-technical reader would be doubtful which phrase the authors should use, and the technical reader is annoyed by being asked virtually whether the authors should say "six" or "half a dozen."

Practically nothing is said about the modern theory of electricity. In a book of this size a page or two about electrons would not be out of place. The elementary theory of electrons enables many electrical phenomena to be described much more concisely, and we have found that it is a very real help to beginners in enabling them to form a mental picture of electrical actions.

We have noticed nothing in this book about the dielectric strength of insulating materials. Surely this is a subject of vital importance to electricians. Mica is mentioned in two or three places, but attention is only drawn to its good *insulating* properties. As a matter of fact, ebonite is a much superior insulator to mica, which is a comparatively poor insulator. The peculiar property of mica which makes it so suitable for commutators is the great resistance it offers to a disruptive discharge of electricity through it.

The book is laudably free from misprints, and has obviously been very carefully corrected for the press. There are, however, several statements which need to be amended. The definition, for instance, of mean spherical candle-power given on p. 672 is not correct. The mean spherical candle-power is the average of the candle-powers measured in all directions from the source. This is not proportional to the cube root of the volume enclosed by the candle-power surface. This error appears in several well-known works. It is time electricians discussed the problem more thoroughly. Several simple practical methods of measuring mean spherical candle-power have recently been devised; one of these might very suitably have been described.

We strongly object to the efficiency of a lamp being given in "watts per candle." This is the inefficiency of the lamp. The efficiency is given in "candles per watt." For instance, the efficiency of an ordinary arc lamp is about one candle per watt, and of a flame arc about four candles per watt. The ordinary inaccurate method of describing their relative merits is to say that the efficiency of an ordinary arc is one watt per candle, and of a flame arc quarter of a watt per candle. It will be seen that the ordinary method of giving the efficiency is quite illogical.

On p. 741 the authors discuss the reasons for the high efficiency of metal filament lamps. It is suggested that an important advantage is that the greater surface of the metal filaments enables them to radiate more light than carbon filaments. "As a result, the metal filament lamp is capable of running commercially at an efficiency of two watts or less per candle-power as compared with 3·5 to 4 watts for carbon filament lamps." Owing to the exceeding fineness of the wire used in metal filament lamps we should have thought that they had a smaller radiating surface than carbon filament lamps taking the same power. Pyrometric measurements prove that the metal filaments are at a much higher temperature than the carbon filaments. Stefan's law proves that the radiation increases very rapidly with the temperature. Hence this alone would be sufficient to prove their undoubtedly higher efficiency. Tungsten lamps, for example, have an efficiency at least three times as great as ordinary carbon lamps. Selective absorption also helps to increase the light efficiency, as compared with the radiating efficiency, of incandescent tungsten. The higher the temperature, the greater the ratio of the light radiation to the total radiation from the lamp.

The points to which we have taken objection are only a small fraction of the book. We can strongly recommend it to beginners, with little time at their disposal, who wish to make rapid and certain progress.

MAGAZINES AND REVIEWS.

THE *Burlington Magazine* contains an excellent editorial article on "Museums," the main point of which is that more effort should be made to reconcile the claims of æsthetic and historical study, by separating and exhibiting collectively the objects which are of the highest æsthetic value, so that they can be enjoyed for their own sake as art; leaving the larger number of inferior works to be studied apart as illustrations of art history.

The *Architectural Record* (New York) gives an account and illustrations of "New Public Buildings at Washington," of which six, of importance, have been erected within the last five years; four being now completed, and two in process of completion. All these are buildings in a severely classic style, which is only fitting in Washington, where the whole "note" of the city, both in the principal existing buildings and the general scheme of laying out, is classic. There is also an article on "A Great American Architect," the late Mr. Eidlitz, who was a remarkable character, but we do not like his architecture, as here illustrated.

The *Berliner-Architekturwelt* gives a series of illustrations of the new buildings for the Deutschen Bank, of which Herr Martens is the architect; a building of classic type, with a fine plan and some stately and effective interior treatment. There are also a series of illustrations of designs for gravestones, from an exhibition of such designs held by the Berlin Arts and Crafts Museum; some of these are very good, and show new ideas in this class of design. By a coincidence, the last issue of the *Architektonische Rundschau* also contains an illustrated article on gravestones, in this case not modern but ancient, and chiefly of Celtic character.

Concrete, in addition to the usual class of useful articles on constructional problems, gives an example of the architectural use of concrete-steel in some illustrations of the new School of Anatomy at Munich. A fairly satisfactory building seems to have been produced, as far as general appearance goes; but small-scale illustrations can give no adequate idea of the success of an attempt of this kind; one has to see the detail, which is probably not very satisfactory.

The *Art Worker's Quarterly* is professedly an "International Art Congress number," and contains a great number of illustrations of students' designs in various forms of applied art, which are really remarkable in their general level of excellence; we do not think there is a bad design among them. In a short paper by Mr. Buckmaster, which forms part of the literary contents, we notice a protest, in which we are disposed to agree, against the too great latitude allowed in our public schools in regard to the syllabus of art subjects. The public schoolboy, he observes, is not to be regarded as an art student or a potential painter, but as one who has to be *taught to draw* accurately, and to observe and understand form and proportion: which is the right educational view. Very few boys in ordinary schools will become artists, but they can all be taught to draw, and that should be the main object in the art-teaching in a general school.

To the *Nineteenth Century* Professor Newcomb contributes an important article on "The Problem of Aerial Navigation," which should be studied by those enthusiasts who imagine that the day of general air travel and air-battles is at hand. Professor Newcomb brings to the subject the dry light of a scientific mind. He shows that the problem of aerial travel is on a totally different basis of circumstances from any other form of travel. "We can never do away with the difference between the ground, the ocean, and the air as supporting agencies; and the solution of the problem must, in the long run, turn upon their respective advantages and drawbacks." To those who point to the comparatively short period in which the steamship has conquered the Atlantic, once thought impassable by it, he replies—"If a steamship were liable to go to the bottom the moment any accident happened to her machinery, the twentieth century would have come upon us without steam navigation on the ocean"; and that is the case of every kind of flying machine which is supported by a rapid movement of translation. The steamer is supported by the water if its screw stops working; the airship is not supported by the air in a similar case. There have been such wild imaginings lately as to what the airship can do in the near future, that it is well to have a reminder from a man of science of the commonsense side of the subject, which is thus admirably expressed:—

> "We have shown what would be the more than colossal dimensions of an airship that could successfully compete with the ocean steamship of to-day, without inquiring into the practicability of building her or the problem of managing her in an ocean storm. May we not say, as the outcome of these reflections, that the efforts at aerial navigation now being made are simply most ingenious attempts to substitute, as a support of moving bodies, the thin air for the solid ground? And is it not evident, on careful consideration, that the ground affords a much better base than air ever can? Resting upon it we feel safe and know where we are. In the air we are carried about by every wind that blows. Any use that we can make of the air for the purpose of transportation, even when our machinery attains ideal perfection, will be uncertain, dangerous, expensive, and inefficient, as compared with transportation on the earth and ocean. The glamour which surrounds the idea of flying through the air is the result of ancestral notions, implanted in the minds of our race before steam transportation had attained its present development. Exceptional cases there may be in which the airship will serve a purpose, but they are few and unimportant."

In the same magazine Miss (or Mrs.) Yeomans gives an account of the immense works that were undertaken under Louis XIV. in order to collect at Versailles sufficient water for the fountains projected there. It is an extraordinary story of millions recklessly expended for a royal whim; a story some parts of which are not generally known. Mr. W. Roberts's article on "Some Recent Picture Sales" is an interesting kind of barometer of the rise or fall (mostly of the rise) in value of works by various artists, some of recent days, some of a century or two old. Turner appears to hold the first place at present in the auction-room. But there are some remarkable records regarding more recent painters. Mr. Orchardson's "Hard Hit," originally sold at 710 guineas, brought 3,300 guineas this year, and F. Walker's "Violet Field" sold for 1,600, the artist's original price having been 50 guineas. There is much more to be gleaned from the article in regard to the fluctuation in the public appreciation of pictures.

Harper contains another of Mr. W. D. Howell's interesting descriptions and impressions of places in England, under the title "The Mother of the American Athens," viz.: Boston, Lincolnshire, whence emigrated those Pilgrim Fathers who founded the other Boston which has become the chief intellectual centre of the United States. There is a good deal of local history in regard to places in the English Boston which are of special interest to an American—history probably new to many English readers; and the impressions of a cultured American visitor in regard to the appearance and architecture of old English cities are always worth reading. The article is illustrated by various photographs of the Lincolnshire town and its buildings.

Blackwood contains an article by Dr. J. Nisbet, "Concerning English Avenues." He shows that the taste for an avenue of trees, as long and straight as could be made, up to a country house, which was during the XVIIth and XVIIIth centuries so prevalent in England, was introduced into England from France, and though practised to some extent before Le Nôtre's time, was very much fostered and encouraged by his influence and example. Charles II., familiar with France as he was, was well acquainted with Le Nôtre's work, and brought him over to England, and it is probable that the Windsor Park avenue was carried out or suggested by him, as also the radiating avenues at Hampton Court. But when the writer of the article claims the laying out and the lake of St. James's Park (praised rather above its merits) as Le Nôtre's work, he is under an error. If Dr. Nisbet consults the old maps in the Crace collection, he will see that the whole laying-out of St. James's Park has been materially altered since Le Nôtre's day. The downfall of the avenue in England was largely brought about by Repton, who seems to have had a special enmity to avenues; a feeling which really seems to have been prompted by the desire to do something different from his predecessors, or to alter and improve their work; and no improvement in planting is so easy as cutting down existing trees. Repton set up a theory that avenues operated as wind-conduits to the house, which could only be the case when the wind happened to blow in a direction parallel or nearly parallel with the avenue; but it served Repton as a reason, and he felled avenues right and left; breaking up sometimes portions of the avenue, so as to destroy its perspective, and leaving intermediate portions standing, where they are still often to be seen in the parks of old mansions; a certain number of trees standing in a double row, and representing all that Repton left of the avenue. Some of those which he destroyed would perhaps by this time have been partially decayed, and have needed felling and renewing; others might still be existent in all their beauty; and though Repton was undoubtedly a man of genius and with many excellent ideas on garden and park design, his attack on the avenues was a mistake. The avenue is really a grand feature, quite worth reviving, and it is noteworthy that in the great scheme now under consideration and partly (we believe) in progress for the beautifying of the city of Washington, an immense avenue of several walks—a wide central one and narrower ones on each side—is the most prominent and the finest feature in the scheme.

In the *Century* the brothers Wright give a description, illustrated by photographs supplied by the authors, of the invention and doings of their "aeroplane," which has attracted so much attention lately. There are some illustrations and a short description of the "Building of Arts" at Bar Harbour, of which Mr. Guy Lowell is the architect, and which is an application of almost pure Greek architecture (Ionic Order) to a modern building. We quote a portion of the description:—

> "One interesting feature of the design, that in this country is somewhat unusual in so severly classic a building, is the use of colour. The tones are the same as were used by the Greeks,* although out of deference to the New England love of severity they are not used quite so vividly or over such large surfaces as in Athens. . . . The auditorium, seating 400, is 37 ft. by 70 ft., and is lighted at the level of the balcony by twelve large windows with heavy Greek grilles opening out on the loggias and the porch. Between these windows are panels of simple Greek mouldings. At each side of the auditorium are three pairs of doors, giving access to the loggias and so arranged that the auditorium, the loggias, the proposed amphitheatre on the north, and the terrace on the south may be used together."

Miss Greenleaf Locke contributes an article, illustrated from photographs, on "The Gardens of South Carolina," where the possession of an exceptional climate seems to have moved some wealthy residents to attempt something in the same style as the villa gardens of Renaissance Italy, apparently with some success. And Miss Sutcliffe, great-granddaughter of Robert Fulton, contributes a most interesting article on the early life of that inventor of the steamboat, who seems to have been a man of very varied talents, and had attained considerable success as a portrait-painter before he devoted his mind to the problem with which his name is now principally associated.

The *Contemporary Review* contains an article by Mr. A. D. Webster, short but

* We presume from this that the architect is satisfied that he knows exactly what were "the tones used by the Greeks." We should have thought there was room for a difference of opinion on that point.

very practical and to the point, on "Our Timber Supplies," the subject specially treated of in the leading article in our issue of last week. Mr. Webster's article is confined to the consideration of timber-growing in our own country. He points out that the total area of land covered by trees in Great Britain is only 4 per cent. of the entire surface, and that a great deal of what is now called and considered as "waste land" might be quite successfully planted with trees and would thus be a source of future wealth and a supply which is likely to be very much wanted. But it is admitted that it is difficult for private owners to carry out such operations on a large scale, since the return for the expenditure must be so long deferred. His suggested remedy is that the State should acquire and plant suitable lands at the rate of 40,000 acres annually, for a period of twenty-five years. "Such lands could in England, Scotland, Wales and Ireland be gradually and cheaply acquired by the State on a change of proprietors, and in Ireland vast tracts of bog land would be willingly handed over to the Government at the present moment at a small sum per acre." We hope this practical suggestion will meet with some attention in official quarters.

Scribner contains a rather remarkable paper by Mr. Benjamin Brooks on "The Contracting Engineer" and his problems and difficulties in carrying out large engineering works and making them pay. The point of view is naturally that of the American contractor, who in consequence of the nature of the country in which many of the railways and viaducts in the United States have to be carried out, has often a more stupendous task than generally falls to the lot of his European contemporaries. The article has some effective illustrations of works in progress on a large scale.

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